

**Reports from the Department of
Philosophy**

Worldlessness, Determinism and Free Will

by

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Ari Maunu

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Abbreviations (See the References section below for details.)

Frege's Works

- BL *The Basic Laws of Arithmetic: Exposition of the System*
- BS *Begriffsschrift*, in BSA / *Conceptual Notation*, in CN (cited by section number, except for *Vorwort*, which is cited by page number)
- BSA *Begriffsschrift und andere Aufsätze*
- BW *Wissenschaftlicher Briefwechsel*
- CN *Conceptual Notation and Related Articles*
- CP *Collected Papers on Mathematics, Logic, and Philosophy*
- GB *Translations from the Philosophical Writings of Gottlob Frege* (ed. Geach & Black)
- GG *Grundgesetze der Arithmetik (1-2) / The Basic Laws of Arithmetic (1-2)*, (in parts) in BL & GB (cited by volume and section number, except for *Vorwort*, which is cited by page number)
- GL *Die Grundlagen der Arithmetik / The Foundations of Arithmetic* (cited by section number, except for *Einleitung*, which is cited by page number)
- KS *Kleine Schriften*
- NS *Nachgelassene Schriften*
- PC *Philosophical and Mathematical Correspondence*
- PW *Posthumous Writings*

Leibniz' Works

- A *Sämtliche Schriften und Briefe*, 1-7 (Akademie; cited by series, volume, and page number)
- AG *Philosophical Essays* (ed. Ariew & Garber)
- Al *The Leibniz-Clarke Correspondence* (ed. Alexander)
- C *Opuscules et fragments inédits de Leibniz* (ed. Couturat)
- CD *Causa Dei* (1710), in G.6
- DM *Discours de métaphysique* (1686), in G.4 / *Discourse on Metaphysics*, in AG (cited by section number)
- FC *Nouvelles lettres et opuscules inédits de Leibniz* (ed. Foucher de Careil)
- G *Die philosophischen Schriften*, 1-7 (ed. Gerhardt; cited by volume and page number)
- GM *Leibnizens mathematische Schriften*, 1-7 (ed. Gerhardt; cited by volume and page number)
- Grua *Textes inédits d'après les manuscrits de la bibliothèque provinciale de Hanover* (ed. Grua)
- H *Theodicy: Essays on the Goodness of God, the Freedom of Man and the Origin of Evil* (ed. Farrar, tr. Huggard)
- L *Philosophical Papers and Letters* (ed. & tr. Loemker)
- LA *The Leibniz-Arnould Correspondence* (1686-91), in G.2 / M (cited by pages of G.2, which are given marginally in M)
- LC *The Leibniz-Clarke Correspondence* (1715-6), in G.7 / Al (cited by letter and section number)

- LH *Die Leibniz-Handschriften der Königlichen öffentlichen Bibliothek zu Hannover*
- M *The Leibniz-Arnauld Correspondence* (ed. Mason)
- Mon. *Monadologie* (1714), in G.6 / *Monadology*, in PM (cited by section number)
- NE *Nouveaux essais sur l'entendement humain* (c. 1704), in A.6.6 (and in G.5) / *New Essays Concerning Human Understanding*, in RB (cited by pages of A.6.6, which are given marginally in RB)
- P *Logical Papers: A Selection* (ed. Parkinson)
- PM *Philosophical Writings* (ed. Parkinson, tr. Morris & Parkinson)
- PNG *Principes de la Nature et de la Grace* (1714), in G.6 / *The Principles of Nature and of Grace*, in PM (cited by section number)
- PSR *De Summa Rerum: Metaphysical Papers 1675-1676* (ed. & tr. Parkinson)
- RB *New Essays Concerning Human Understanding* (ed. Remnant & Bennett)
- Theod. *Essais de Théodicée* (1710), in G.6 / *Theodicy*, in H (cited, where possible, by section number)
- WF *Leibniz's 'New System' and Associated Contemporary Texts* (ed. & tr. Woolhouse & Francks)

1 Introduction

1.1 Preview

I have three main objectives in this essay. First, in chapter 2, I shall put forward and justify what I call *worldlessness*, by which I mean the following: All truths (as well as falsehoods) are wholly independent of any circumstances, not only time and place but also *possible worlds*. It follows from this view that whatever is *actually* true must be taken as true with respect to every possible world, which means that all truths are (in a sense) necessary.¹ However, the account I shall propound is different from what is known in the trade as *necessitarianism*, i.e. the view that there is only one possible world, viz. the actual one, for the doctrine of the worldlessness of truth values, despite its commitment to the necessity of truths and falsehoods, is quite compatible with the idea of there being other possible worlds. Another important issue in chapter 2, explored in particular in section 2.12, is the claim that there is no real change in the world.

Secondly, in chapter 3 I consider the eminent traditional argument for determinism, deriving from Aristotle, namely, *logical determinism*, i.e. determinism justified by an appeal to the logical principle of *bivalence* (that all proper statements, including those concerning the future, are either true or false). In this connection I try to show that, (i), the formulation of the conclusion of this argument as "Whatever will happen will happen of *necessity*" is implausible, at least from the modern point of view, (ii), the

¹ For instance, the truths I express by saying now, "Finland is a republic" and "I am here now", are according to this doctrine non-contingent truths (nevertheless, as we shall see, it is also true to say that Finland could fail to be a republic now and that I could be elsewhere now).

formulation as "Whatever will happen will happen *inevitably*" is more to the point, and (iii), on the basis of the worldless and timeless aspect advocated in chapter 2, this latter formulation is quite harmless, essentially amounting to the trivial statement, "Whatever will happen will happen".

Thirdly, in chapter 4 I study *theological determinism*, or determinism that arises from God's supposed providential control over everything that happens. In this connection, I shall survey some historical accounts of the relation between human free will and determinism (not only theological but also causal determinism); the philosophers the views of whom I shall attend to include Chrysippus, St. Augustine, Boethius and Aquinas. I shall in particular consider G.W. Leibniz' theodicean aspirations, viz. his solution to the *problem of evil* and, especially, his compatibilist attempts to reconcile human free will with the strictly deterministic flow of actual events.² I think it is important to try to explicate Leibniz' ingenious account of these matters, since it seems that it has not been fully appreciated in the literature, not even by contemporary Leibniz scholars (such as B. Mates, R.C. Sleight, C. Wilson, R.M. Adams and D. Rutherford).³ In providing the Leibnizian compatibilist solution of the problem of determinism and freedom in chapter 4, I shall utilize the approach of chapter 2.

1.2 Some basic notions

Since my starting point in chapter 2 is strongly Fregean it is perhaps helpful to browse briefly the Fregean jargon I shall employ. According to Frege, all

² To Leibniz, it must be said, the justification of determinism is not only theological (i.e. due to God's close providential control) but also causal or "scientific" (due to the principle that everything must have a reason) as well as logical (due to the view that all objects or substances are what they are, i.e. were, are and will be exactly what they were, are and will be).

³ In Mates 1986, Sleight 1990, C. Wilson 1990, Adams 1994, Rutherford 1995.

proper signs have a *Bedeutung* and a *Sinn*.⁴ The *Bedeutung*, or *referent*, of a sign is the item it picks out or refers to, and its *Sinn* is, roughly, its *content*. There is in the literature a considerable dispute over the true nature and significance of Frege's notion of *Sinn* – in the present essay, however, this dispute may be ignored.

Frege calls the *Sinn* of a *Satz*, or *statement*, a *Gedanke*, or *thought*. That is, a *Gedanke* is a *Sinn* of a declarative *sentence* as used in a definite context to make a statement. A *Gedanke* is *expressed* by a *Satz*, it is what is shared in communication between thinkers, and it is an item that may be thought, believed, known, and so on: For instance, a believer's believing something is his or her being in the relation of *taking as true* to a *Gedanke*.⁵ As this suggests, a *Gedanke* is what is ultimately to be called *true* or *false*.⁶

⁴ In connection with Frege, I use the German words *Sinn*, *Bedeutung*, *Gedanke*, *Satz*, *Begriff*, etc., instead of their usual translations *sense*, *reference*, *thought*, *sentence*, *concept*, etc., in order to emphasize that Frege uses them as technical terms, as he tells us, with regard to 'Gedanke', in his manuscript "*Logik*" (NS 147-8 / PW 135-7, 1897).

⁵ See esp. KS 145, 151-2 / CP 159, 165-6 (1892), BW 231-2, 246 / PC 149, 164 (1902-4).

⁶ (i) Frege often says that we can very well call *Sätze* true and false. However, Frege holds that *Sätze* have truth values only in a derivative sense – what really are true or false (or neither) are *Gedanken* (i.e. we may say only derivatively that a *Satz* expressing a true *Gedanke* is true). See e.g.

GG.2 §104 (1903)

KS 344-5 / CP 353 (1918)

KS 381n, 390n / CP 393n, 403n (1923)

NS 137-8, 182, 189, 193n, 251 / PW 126-7, 168, 174, 178n, 233 (1897-1914).

(ii) Perhaps the distinction between *Sätze* (or statements) and sentences deserves a comment. I think it is utterly unfortunate that some prefer to say that *sentences* are true or false, for this does not agree with our natural way of speaking at all. (The influence of the terminology of formal logic is here obvious.) If you and I both say, "I am bald", we use the same sentence – but this is never used as a basis for the claim that the same bearer of truth value is in question. (For if it were, the same bearer could be true and false at the same time.) For this reason I use the words *statement* and *Satz*: By the same sentence "I am bald" you and I employ different *Sätze* to make different statements.

The notion of *Begriff* will be important below. For Frege, there is a fundamental, undefinable difference between *Gegenstände*, or *objects*, and *functions*. In his paper "*Function und Begriff*" (1891), and elsewhere, Frege explains this difference by means of an arithmetical example as follows (KS 126f. / CP 138f.): A function, such as

$$2x^3 + x,$$

– or, as Frege prefers to write this,

$$2\xi^3 + \xi,$$

where 'ξ' indicates an *empty place* – is *incomplete* or "*unsaturated*". For it does not designate an object – only after it is properly *supplemented*, we get an object, e.g. the number 132, when we supplement this function by the number four (i.e. when we apply this function to 4 as an argument).⁷

Of course, there was nothing new in this notion of a function as such at the time of Frege's. However, one of Frege's greatest ideas is to apply this notion

⁷ Frege discusses the distinction between completeness and incompleteness over and over again. See e.g.

BS §§ 9-10, 20 (1879);

GL X, §§ 51, 70, 97 (1884);

KS 127-30, 133-5, 156-8, 168-9, 171n, 178, 233, 269-71, 274, 278-9, 294, 348-9, 361, 364n, 375-6, 378-9, 381-4 / CP 140-3, 146-8, 170-3, 183-4, 187n, 193-4, 248, 281-2, 286, 290, 292, 307, 358, 370, 375n, 386-7, 390-1, 393-6 (1891-1923);

GG.1 §§ 0-2, 4 (1893);

GG.2 §§ 66, 147n (1903);

NS 19, 38n, 98, 109n, 130, 138, 146-7, 150, 166, 169, 192-3, 203, 209-10, 212, 217-8, 231, 246-7, 253, 258, 262-3, 274-5, 290 / PW 18, 34n, 89, 99n, 119-20, 127, 134-5, 139, 154, 156, 177-8, 187, 192-3, 195, 201-2, 214, 228-9, 234-5, 239, 243, 254-5, 271 (1881-1924);
 BW 184, 224, 243, 120-1, 85-7 / PC 116, 142, 161, 191n69, 54-5 (1896-1925).

of a function more generally.⁸ For example,

$$\xi^2 = 4$$

may be regarded as a function as well, viz. a function that gives as a result the *truth value the True* for the arguments 2 and -2 and the truth value *the False* for all other arguments.⁹ Functions that return a truth value on application Frege calls *Begriffe*, or concepts.¹⁰ Those objects that give the True as a result when a *Begriff* is applied to it, are said to *fall under* that *Begriff*. Of course, *Begriffe* (and other functions) can also be used outside mathematical discourse; for example

ξ is mortal

is a function that returns the True when applied to mortals and the False for the rest, i.e. all and only mortals fall under *being a mortal*. Besides one-place or

⁸ This is a great idea especially with respect to the development of logic, for it leads directly to the introduction of quantifiers.

⁹ For Frege, the True and the False are indispensable "logical objects"; see e.g.

KS 132-6 / CP 144-9 (1891)

KS 149-50 / CP 163-4 (1892)

GG.1 x, §§ 2-3, 5, 10, 32, etc. (1893)

KS 226-7 / CP 240-2 (1897)

KS 281 / CP 293 (1906)

NS 129, 167-9, 209-12, 251, 253-4, 276 / PW 119, 155-6, 192-5, 233, 235, 255 (c. 1893-1919);

BW 219, 231-2, 121 / PC 137, 149-50, 191n69 (1902-10).

¹⁰ In discussing particularly Frege's views, I shall use the German word "Begriff" instead of "concept" for two reasons. First, the word "concept" is utilized, both traditionally and in modern times, in senses different from what Frege means by "Begriff". Secondly, some influential present-century Fregean philosophers, such as Alonzo Church and Rudolf Carnap, adopted the word "concept" for what Frege calls *Sinn* (i.e. on their interpretation of Frege, for something like "way of conceiving" the referent (*Bedeutung*)) – thus creating unfortunate confusion.

unary Begriffe (and other functions) there are of course also many-place Begriffe, or *relations*, such as $\xi > \zeta$ and ξ gives ζ to η . I shall usually call relations Begriffe as well.

Frege regards the distinction between functions, including Begriffe, and objects as undefinable and unanalysable, as "something too simple to admit of logical analysis" (KS 134 / CP 147, 1891) and as a "logically primitive phenomenon which must simply be accepted and cannot be reduced to something simpler" (KS 269 / CP 281, 1903).¹¹

The distinction between the incomplete and the complete applies to all semantic levels: To expressions, Bedeutungen (i.e. referents) and Sinne. A complete expression is an *Eigenname* that has an object as its Bedeutung and expresses a (complete) Sinn. As a special case, an Eigenname of a truth value is a Satz which expresses a Gedanke (as indicated above). An incomplete expression, in turn, has a function as its Bedeutung and it expresses only an incomplete Sinn. In the special case of Begriffe (including relations), the expression is called a *predicate*, and it has a Begriff as a referent while it expresses an incomplete Gedanke. Frege talks about the distinction complete-incomplete mainly at the level of Bedeutungen. In NS 129 / PW 119 (c. 1893), however, he notes that "the words 'unsaturated' and 'predicative' seem more suited to the Sinn than the Bedeutung",¹² and there are plenty of passages in the

¹¹ See also e.g.

KS 278-9 / CP 290, 292 (1904)

NS 254 / PW 235 (1914)

NS 290 / PW 271 (c. 1924)

BW 150 / PC 92 (1900)

BW 121-2 / PC 191n69, 192n71 (1910).

¹² For incomplete Gedanken (and other Sinne), see e.g.

KS 364n / CP 375n, 386-7 (1919)

KS 378-84 / CP 390-6 (1923)

NS 138, 146-7, 150 / PW 127, 134-5, 139 (1897)

NS 203-4, 209-10, 217-8 / PW 187, 192-3, 195, 201-2 (1906)

Frege corpus where he states that the distinction we are discussing applies also to expressions.¹³

Begriffe and other functions are nonobjects – however, *extensions* or, in general, what Frege calls *Wertverlaufen*, are objects that correspond to Begriffe or, in general, to functions. The extension of the Begriff *being mortal*, for example, is the set of mortal things. However, Frege warns us, especially in a paper published in 1895 (KS 193-210 / CP 210-28), against thinking that extension is a set in the sense of being an aggregate, or a mere collection of things (KS 210 / CP 228):

The extension of a Begriff does not consist of objects falling under the Begriff, in the way, e.g., that a wood consists of trees; it attaches to the Begriff and to this alone. The Begriff thus takes logical precedence of its extension.

If extension consisted in a mere collection of objects then Begriffe under which nothing falls, i.e. *empty* Begriffe, would have no extension at all (just like there is no wood if there are no trees). However, it is patent that e.g. *being a unicorn* and *being an elf* share something, for they have the *same* extension, viz. the null extension. But then there must be *something* that is the null extension, something that is the same. An empty set is something rather than nothing – if set (extension) were a mere collection, empty set would be nothing, and thus there would be no justification in speaking of the empty set

BW 224 / PC 142 (1902)

BW 221 / PC 191n69 (1910).

¹³ At least in the following places Frege explicitly mentions incomplete expressions:

KS 156-8 / CP 170-3 (1892)

KS 168-9 / CP 183-4 (1892)

KS 274 / CP 286 (1904)

KS 294 / CP 307 (1906)

KS 348-9, 361 / CP 358, 370 (1918)

NS 192-3, 217-8, 246-7, 290 / PW 177-8, 201-2, 228-9, 271 (1906-24)

BW 224, 243, 120-1 / PC 142, 161, 191n69 (1902-10).

at all.¹⁴

In general, the notion of a Begriff, while being in itself primitive and undefinable, is logically prior to that of extension. According to Frege (GG.2 §146; 1903), "we must regard it as a fundamental law of logic that we are justified in recognizing something common" in two Begriffe under which exactly the same objects fall (i.e. which return the True for exactly the same objects).¹⁵

The notion of a *Wertverlauf* of a function may be seen as a generalization of that of extension of a Begriff. The Wertverlauf of a Begriff is its extension, while the Wertverlauf of a function that is not a Begriff is a logical object that is the same for any two functions which always return the same value for the same argument – thus for instance $\xi^2 - 1$ and $(\xi + 1)(\xi - 1)$ have the same Wertverlauf.¹⁶

¹⁴ See also e.g.

GL §§ 46, 49, 74, 94 (1884)

KS 122-3 / CP 133-4 (1891)

GG.1 xiv, §§ 0, 13n (1893)

KS 185 / CP 202 (1894)

KS 225 / CP 239-40 (1897)

NS 38, 133, 135, 194-9 / PW 34, 122, 124, 179-83 (c. 1881-1906)

BW 96, 177 / PC 63, 109 (1891f.).

¹⁵ See also esp.

KS 105 / CP 114 (1885)

KS 130 / CP 142 (1891)

KS 209 / CP 228 (1895)

KS 225 / CP 239-40 (1897)

GG.2 §147 (1903)

NS 197-200 / PW 181-4 (1906)

BW 223 / PC 141 (1902)

BW 116, 121-2 / PC 181n7, 191n69, 192n71 (1910).

¹⁶ See here especially GG.1 §§9-10 (1893).

Characteristic marks (Merkmale) of a Begriff are those properties (Begriffe) an object must have in order to fall under that Begriff. The characteristic marks of *being a golden mountain* are obviously *being golden* and *being a mountain*, and presumably – or this at least is the traditional view – *being golden* and *being a mountain* can be analysed further by their characteristic marks, until the most basic Begriffe – roughly, Leibniz' *alphabet of human thought* – are reached. In KS 266, 271 / CP 277, 283 (1903) Frege describes characteristic marks of a Begriff as Begriffe that are "logical parts" of the Begriff the marks of which are in question – they are the properties an object must have in order to fall under that Begriff. In NS 37-8 / PW 33-4 (c. 1881) Frege says that characteristic marks "constitute the essence of a Begriff".¹⁷

In this connection the question of the relation between Begriffe and *properties* arises. It is natural to say that an object may have a property, but to say that it may have a Begriff is very unnatural, for a Begriff is a function from objects to truth values, and it does not make much sense to say that an object "has" this function. However, there is an obvious correspondence between Begriffe and properties: An object that falls under the Begriff *being a horse*, for example, has the property of being a horse. I shall speak rather freely of items such as *being an F* either as Begriffe or as properties.

For Frege, Begriffe must be sharply delimited and complete, i.e. must give a definite truth value for *every* argument, for "if this were not satisfied it would

¹⁷ See also

BS IV (1879);

GL §§ 49-50, 53, 88, 104 (1884);

KS 123, 155, 164, 174-5, 181, 186, 314 / CP 134, 170, 179, 190-1, 197, 203, 330 (1891-1906);

GG.1 xiv, §§ 0, 13 (1893);

NS 1, 71, 74, 110-3, 118, 120-1, 133, 196, 232, 247 / PW 1, 63, 67, 100-3, 108, 110-1, 122, 181, 214, 229 (1884-1914);

BW 177, 61, 73, 148-51, 121-2, 153-6 / PC 109, 35, 46, 90-3, 191n69, 192n71, 95-8 (1892-1919).

be impossible to set forth logical laws about them" (KS 135 / CP 148; 1891). This means that for example "The Sun > 2" must have a definite truth value, viz. the False. This may sound utterly artificial, but Frege thinks he has a good justification for this requirement: If it is not made, the truth of one of the most basic *laws of thought* is lost, viz. what I call *the validity of the trivial disjunction*: all statements of the form $p \vee \sim p$ are true.¹⁸ For if the sharpness requirement is not fulfilled for the object a and the Begriff F , then it must be said, Frege holds, that neither Fa nor $\sim Fa$ has a truth value, with the apparent consequence that $Fa \vee \sim Fa$ has no truth value either, which contradicts the law in question.

Of course, Frege admits that in natural language the sharpness requirement is not fulfilled – there is *vagueness* in the uses of many words, such as 'bald'. Frege regards this as a bad defect in natural language, a defect which is perhaps responsible for many futile disputes. In order that thinking be logical and precise, and in order to avoid useless disputes, what is thought of, i.e. objects and Begriffe, must be fully definite, with the consequence that Gedanken that are employed in thinking and communication are as clear as possible.¹⁹

¹⁸ This is often called the *law of the excluded middle*, or *tertium non datur*, in the literature (and Frege calls it so as well). However, I think this name is nowadays misleading since there are many systems of *many-valued logics* in which the "middle" is allowed (or even several middles), but nevertheless $p \vee \sim p$ remains as logically valid. Cf. chapter 3 below.

¹⁹ Frege discusses the sharpness requirement in the following places:

GL §§ 1, 56, 66, 68, 74 (1884);

KS 103, 122-3, 135-6, 209, 230, 268, 290-1 / CP 112, 133-4, 148, 227, 245, 280, 303-4 (1885-1906);

GG.1 §5n (1893);

GG.2 §§ 56, 58, 60, 62-5 (1903);

NS 133, 135, 168, 194-5, 206, 212, 248, 257, 260, 262-3 / PW 122, 124, 155, 179-80, 189, 195-6, 229, 238, 241, 243-4 (1893-1914);

BW 164-5, 73, 77, 182-4, 194, 217 / PC 100-1, 45, 49, 114-6, 125, 135 (1882-1902).

Begriffe considered so far take objects as arguments, or, since it is perhaps clearer to speak in terms of expressions, so far I have only mentioned predicates (Begriff-words) that yield Sätze when supplemented by Eigennamen. These Sätze are about objects named in them. However, they are about the Begriffe named in them just as well. Thus, "The object a is a Ψ ", where ' Ψ ' indicates an empty place for a Begriff, may be regarded as a *second-level Begriff being a property of the object a , or being a Begriff the object a falls under.*²⁰

The most notable higher-level Begriffe relate to *quantifiers*. Quantification is about Begriffe, and thus indeed of second level: "There are horses", for example, says that the Begriff *being a horse* falls within the second-level Begriff *being exemplified*, and "All men are mortal" that there is a second-level relation of *subordination* between the Begriffe *being a man* and *being mortal*. Quantification can be performed with respect to functions (and thus with respect to Begriffe) as well. Such a quantification is of course of third level. In this manner, we can generate Begriffe of any level 1, 2, 3, and so on.²¹

There are unequal-levelled Begriffe as well. Indeed, any truth value named by

The object a is an F ,

or

$F(a)$

may be analysed in three ways: First, as

a falls under the first-level Begriff $F(\xi)$;

²⁰ See esp. BS §10 (1879), GL §53 (1884), GG.1 §22 (1893).

²¹ See esp. BS §9 (1879), GL §§ 47, 53 (1884), GG.1 §§19-21 and elsewhere (1893).

secondly, as

$F(\xi)$ falls within the second-level Begriff $\Psi(a)$ – i.e. within *being a property of the object a*;

and thirdly, as

a and $F(\xi)$ fall under/within the unequal-levelled Begriff $\Psi(\xi)$ – i.e. within/under the relation of *subsumption*.²²

²² For unequal-levelled Begriffe, see especially KS 141 / CP 155 (1891), GG.1 §22 (1893).

2 Worldlessness

2.1 Indexicality

Frege emphasizes very strongly the importance of taking contextual factors such as time and place as fixed with respect to *empirical Gedanken*, or Gedanken that are about changing empirical objects. He constantly asserts that a (declarative) sentence as used in a certain context does not always amount to a Satz in itself, i.e. does not automatically express a Gedanke. To obtain a Satz such a sentence must somehow be completed with a specification of the context. In his most important paper, "*Der Gedanke*" (1918), Frege writes as follows (KS 348-9 / CP 358):²³

The present tense is used in two ways: first, in order to indicate a time; second, in order to eliminate any temporal restriction, where timelessness or eternity is part of the Gedanke – consider for instance the laws of mathematics. Which of the two cases occurs is not expressed but must be divined. If a time-indication is conveyed by the present tense one must know when the sentence was uttered in order to grasp the Gedanke correctly. Therefore the time of utterance is a part of the expression of the Gedanke. If someone wants to say today what he expressed yesterday using the word 'today', he will replace this word with 'yesterday'. Although the Gedanke is the same, its verbal expression must be different in order that the change of Sinn which would otherwise be effected by the differing times of utterance may be cancelled out. [--] In all such cases the mere wording, as it can be preserved in writing, is not the complete expression of the Gedanke; the

²³ See also e.g.

GG.1 xvi-xvii (1893)

KS 274 / CP 286 (1904)

KS 301-4, 313-4, 318-9 / CP 315-8, 329-30, 334-5 (1906)

KS 350, 361 / CP 360, 370 (1918)

KS 364n / CP 375n (1919)

NS 4-5, 138, 146-7, 150, 173-4, 202, 230 / PW 4-5, 127, 134-5, 139, 159, 186, 213 (c. 1884-1914).

knowledge of certain conditions accompanying the utterance, which are used as means of expressing the *Gedanke*, is needed for us to grasp the *Gedanke* correctly. [--] The same utterance containing the word 'I' in the mouths of different men will express different *Gedanken*, of which some may be true, others false.

A hint of how this context-dependence should be dealt with formally, is given in Frege's comments, written in 1910 (BW 120-1 / PC 191n69), on a paper by P.E.B. Jourdain (1912):²⁴

It is not the case that a *Gedanke* is true at one time and false at another, but it is either true or false – *tertium non datur*. The false appearance that a *Gedanke* can be true at one time and false at another arises from an incomplete expression. A complete Satz, or expression of a *Gedanke*, must also contain the time datum. If we say: 'The Elbe has risen one metre above the zero of the gauge at Magdeburg', the time belongs to the *Gedanke*-content [*Gedankeninhalt*] of the Satz [--]. But the truth is timeless. More correctly, what is meant would be thus expressed. Let the function $\Phi(\xi)$ have the True as value for some moments of time as arguments, and the False for others, and the False for all arguments which are not moments of time.

Obviously, in these statements Frege acknowledges the *indexicality* of most sentences of "natural" discourse (as opposed to the nonindexicality or "stability" of expressions relating to abstract matters, e.g. those of mathematics). A sentence such as "The king of Sweden is bald" is incomplete as an expression of a *Gedanke*, or rather is not an expression of a *Gedanke* at all. It needs to be supplemented by an addition like "now" or "at noon GMT on

²⁴ Already in *Grundlagen der Arithmetik* (1884) we find (GL §46): "The fact is that the Begriff 'inhabitant of Germany' contains a time-reference as a variable element in it, or, to put it mathematically, is a function of the time. Instead of 'a is an inhabitant of Germany' we can say 'a inhabits Germany', and this refers to the current date at the time. Thus in the Begriff itself there is already something fluid. On the other hand, the number belonging to the Begriff 'inhabitant of Germany at New Year 1883, Berlin time' is the same for all eternity."

In "*Über Sinn und Bedeutung*" (1892; KS 155-6 / CP 170), in turn, Frege states: "Places, instants, stretches of time, are, logically considered, objects; hence the linguistic designation of a definite place, a definite instant, or a stretch of time is to be regarded as an Eigenname. [--] In [this] way, expressions for Begriffe bringing in places, etc., can be constructed."

June 1, 1999". Perhaps we can also say that often, or even typically, the context itself somehow functions as a part of an expression of a *Gedanke*, without any explicit linguistic supplement in a sentence.²⁵ In any case, two types of indexical sentences may be distinguished from each other, viz., *explicitly indexical* sentences, such as "I am bald", "Yesterday was sunny", which contain an *indexical* – i.e. a singular term the *Bedeutung* of which is determined by the context of use – and *implicitly indexical* sentences, such as "The king of Sweden is bald", which in themselves are without indexicals altogether (but, as indicated above, may be supplemented by an indexical, e.g. "now").

2.2 Fregean treatment of temporal statements

I think we have in the passages from Frege cited above all the ingredients of a modest analysis of temporal modality. In order to see this clearly, let us consider the following simple example:

(21) The shortest spy in the world is bald.

As we just saw, on Frege's view this arises from an application of the *Begriff* ξ *is bald*, or *bald*(ξ), to the shortest spy. We may thus rewrite (21) as

bald(the shortest spy),

²⁵ Of course, in genuine uses of *demonstratives*, such as *that* in "That man is bald" (accompanied with a pointing or *demonstration*), a part of expression of a *Gedanke* is certainly non-linguistic (or at least wordless). Frege acknowledges this in KS 348-9 / CP 358 (1918)
 NS 100 / PW 91 (c. 1892)
 NS 146 / PW 134 (1897)
 NS 230 / PW 213 (1914).

or, in short,

(22) B(theS).

Now, (21)-(22) does not amount to a definite statement, i.e. to a Satz, unless its "context of interpretation" is specified. Let us stipulate that the context of (21) is the moment of time *the noon on April 21, 1999*.

Then, (21) is more fully,

(23) The shortest spy is bald at noon on April 21, 1999.

However, even this is not enough, or not entirely definite, for the context of interpretation of the expression 'the shortest spy' in (23) must be specified as well. For there are natural statements of the sort,

The person who was the shortest spy last year is bald right now,

where two distinct temporal circumstances are involved: Those designated by 'last year' and 'right now'.²⁶ So, (23) as a rendering of (21) must be specified further. The most natural interpretation is the following:

(24) The shortest spy at noon on April 21, 1999, is bald at noon on April 21, 1999.²⁷

We may write (24) as,

²⁶ It is of course possible that the person who was the shortest spy last year is not the shortest spy right now.

²⁷ Of course, it is perfectly possible and even natural to regard (23) as a condensed way of putting (24).

bald(the shortest spy at noon on April 21, 1999) at noon on April 21, 1999,

or – abbreviating 'is bald at noon on April 21 1999' by ' B^n ' and 'the shortest spy at noon on April 21 1999' by ' $theS^n$ ' – as

$B^n(theS^n)$.

2.3 A treatment of alethic statements

There is an obvious extension of this treatment of temporality to alethic modality, i.e. to statements such as "It is necessarily the case that $7+5=12$ " and "The Second World War could have been avoided". Utilizing the well-known notion of *possible world*, the most natural further specification of (24) is the following:

The *actual* shortest spy at noon on April 21, 1999, is *actually* bald at noon on April 21, 1999,

or, denoting the *actual world* by ' α ',

$B^{\alpha n}(theS^{\alpha n})$.

Then, suppressing for simplicity the mention of time (i.e. taking it as fixed), we may analyse the modal statements,

Possibly, the shortest spy is bald,²⁸

²⁸ There is a natural *epistemic* reading of this sentence, according to which it means: As far as we know, the shortest spy could be bald. This is not meant here but the following "objective" reading: There is a possibility, irrespective of our knowledge of it, that the shortest spy is bald. This sense of "possible" is the dual pair of the (most natural) notion of

and

(25) Necessarily, the shortest spy is bald,

respectively, as follows (on certain natural interpretations):

For some possible worlds x , the shortest spy of x is bald in x .

For every possible world x , the shortest spy of x is bald in x .

In a more formal manner, these may be written respectively as,

$$\exists x B^x(\text{the}S^x)$$

and

(26) $\forall x B^x(\text{the}S^x)$.²⁹

As we have seen in the quotes given above, it is Frege's view that we do not strictly speaking have a Satz, i.e. an expression of a *Gedanke*, unless the Satz is complete in every respect. Besides the possible world, also the following contextual factors are often, but not always, relevant: the moment (or stretch) of time, the place (position) and, in many explicitly indexical statements, the

necessity.

²⁹ (i) I am assuming that the underlying modal logic is S5, which means that we do not have to introduce the binary relation of *accessibility* or *alternativeness* between worlds. In weaker systems of modal logic (25), for example, comes out as

$$\forall x (A(\alpha, x) \rightarrow B^x(\text{the}S^x)),$$

where ' A ' names the mentioned accessibility relation.

(ii) It is also assumed in formalizations such as (26) that the range of quantification is restricted to worlds. More explicit form of (26) is thus

$$\forall x (W(x) \rightarrow B^x(\text{the}S^x)),$$

where ' $W(\xi)$ ' names the property of being a world.

agents of the context.³⁰ Below, I shall be rather liberal with my specifications of these contextual factors, adopting the general convention that whenever a world is not mentioned the actual world is meant (that is, the history of the actual world, with all its positions and agents, is meant) – and a suppressed moment of time is *now*, and a suppressed place *here*. Also, I often use the word 'world' as if it covered the moment of time as well.³¹

It may be questioned whether it is always possible to state all relevant contextual factors in a Satz, to yield it complete (i.e. a genuine expression of a Gedanke). Certainly, as I indicated above, sentences are often, or in fact typically, used and understood in a context, without an explicit mention of the context in the sentence. As I already indicated above, perhaps we can understand *Satz* in an extended sense so that the relevant context may somehow be *itself* a part of an expression of a Gedanke (i.e. a part of a Satz).

2.4 Comparison with the standard possible worlds semantics

I think we have here, as introduced by means of examples, a treatment of modality equalling in power to that of usual possible worlds semantics. Let us now examine a bit the account I have just outlined, and compare it with the standard possible worlds account.

In the approach sketched above – which I think may aptly be called Fregean – a Begriff like *being bald* is regarded as a Begriff (relation) ξ *is bald in a world* ζ , or $B^{\zeta}(\xi)$,³² that is, as a function from pairs of objects to truth values:

³⁰ Cf. here Scott 1970.

³¹ Admittedly, it would be clearer to follow e.g. Scott 1970, and introduce a new word, such as "index", for the quadruple $\langle w, t, p, a \rangle$, where w represents a world, t an instant or stretch of time, p a position or place, and a an agent.

³² Here (and in many places below) I suppress the mention of time, or take it as fixed.

bald: Objects \times Objects \rightarrow Truth values.

The function ξ is bald in a world ζ returns the value the True whenever the second argument-place is taken by a world-object such that the object taking the first argument-place is bald in that world.³³

In my opinion, the usual possible worlds approach tends to support the following misguided picture: There is the "actual world", full of "actual objects", and then there are many "counterfactual worlds", possibly in some respects similar to that actual world. In these other worlds we perhaps find some "actual objects", or perhaps – and this is the most outrageous account – some kinds of "counterparts" of them, related to them by "bonds of similarity".³⁴ This picture raises *the problem of transworld identity*: How can we give any criteria for the sameness of an individual "existing" in two different possible worlds? Does it make any sense at all to say, for instance, that some actually existing object, say, the present Dalai Lama, is also a denizen of some other, counterfactual world? How many of the properties of an object, and which properties exactly, may change so that the object remains as the same (through possible worlds)?³⁵

Many possible worlds semanticists indeed say things like the following: We may consider a certain object of the actual world, with its actual properties, and then consider this same object in some other possible world, where this same object has quite different properties. I think this will not do, unless one is willing to contradict the principle of *indiscernibility of identicals*, i.e. the

³³ Definite descriptions, such as 'the shortest spy', are in turn to be understood as functions from objects (worlds) to objects, i.e. e.g. as *the shortest spy in a world* ξ , which for a given world returns an object, viz., the shortest spy of that world.

³⁴ See Lewis 1968, 1973, 1979, 1986, and elsewhere.

³⁵ See e.g. the articles in the anthology *The Possible and the Actual* (edited by M. Loux, 1979).

principle that if the object *a* is the object *b*, then whatever is true of *a* is true of *b*, and *vice versa*, whatever is true of *b* is true of *a* (i.e. *a* and *b* have exactly the same properties). Certainly, this principle holds for good self-evidently, and therefore the object of the other world cannot be the same object as the actual one, if the former is even in the minutest respect different from the latter.³⁶

In more plausible (or perhaps we should say: in more carefully presented) versions of possible worlds semantics the notion of a *world line* or *individuating function* is utilized. It is said that in alethic contexts we should understand *our* individuals as something like world lines through possible worlds, i.e. as functions from worlds to objects. Any such world line returns as its values "slices" or "appearances" or "manifestations" of the individual in question – these slices are what "appear" in different possible worlds.³⁷

A parallel with a temporal consideration is helpful in the clarification of this approach. In the standard modern treatment of temporal discourse, deriving from Prior (1957), "possible worlds" are interpreted as different moments of time (with the present instant of time *now* as the "actual world") – or, more precisely, they are interpreted as describing how the world is at different instants. A temporal statement such as,

³⁶ Cf. section 2.12 below.

³⁷ See e.g.

Hintikka 1969 (99-109, 125-8, 168-81, etc.), 1974 (217-21), 1975 (18-9, 28-35, 44-50, 64-7, 209-19, etc.), 1987 (284-9, 320-3, 327-30, 339-44, etc.), 1990 (135-53), 1992 (100, 103);

Hintikka & Hintikka 1989 (20-2, 57-8, 41-3, 76-90, 137-9, 142-4, etc.);

Hintikka & Sandu 1991 (167-70);

Kaplan 1967 (103-4), 1973 (503-5, 513-5), 1977 (492-7, etc.), 1989;

Scott 1970 (167);

Barwise & Perry 1983 (8, etc.).

(27) Always in the past, David has been honest,³⁸

says, on this account, that at every moment in the past, (the actual world is such that) David is honest. We should here understand David as spread over moments of time, so to speak, or as consisting in *temporal parts* or *stages* or *time-slices* of him – each such slice being a denizen of some moment or other. Analogously, in connection with alethic modalities, individuals are said to be alethic world lines which consist in alethic or "metaphysical" slices of these individuals – each slice belonging to some possible world or other. On the slice approach, the question concerning objects' identity through time and worlds is: What binds two temporal or alethic slices of the "same" object together?

I think this is still a bad way of looking into modal matters. For example, the following difficulty arises at once: To talk about slices or "appearances-in-a-world" is obviously to take them as entities of some sort or other and also to attribute some sort of existence or subsistence to them. What are alethic slices?

In the Fregean approach outlined above, there are no such slices at all (as we shall see more clearly below). Subsequently, the question of transworld identification does not even arise. In that approach, objects and Begriffe (properties and relations) are put in focus – and this is certainly the proper thing to do, for we are in modal considerations really interested in the objects and Begriffe in the actual world. Possible worlds approach tends to put possible worlds in focus, which is in my opinion misguided, since we really are not interested *at all* in other worlds as such.

However, it is now perhaps claimed that all the putative problems, of e.g. transworld identity, are in my Fregean approach only transferred into the world component w in representations such as $B^w(a)$. That is, it may be claimed that

³⁸ This should be interpreted as expressing something like, "David has been honest all his life" (and not as stating that David was honest even before he was born).

since here worlds are referred to, and these worlds have objects or individuals as denizens, the question inevitably arises, how denizens of different worlds are matched with each other, or, how it is determined whether a given denizen of one world "is the same object" as a given denizen of some other world.

My answer to this objection is as follows. When we ask, which object some ordinary particular, say, Kofi Annan, is, one type of reply is: He is the person that has such-and-such properties at the moment of time t and such-and-such properties at the moment of time s and such-and-such properties at the moment of time r , and so on. In this manner, a *complete* description of the properties of Kofi Annan may be given, at least *in principle*, or, using the notion of God as an aid in the traditional manner, God can apprehend this endlessly complicated *complete individual concept* of Kofi Annan,³⁹ which we may represent as a conjunction

$$\&_{i\tau} F_i^\tau(\xi)$$

(where τ ranges over moments of time). I think we, or at least God, may just as well consider Annan, not only as the object he actually is, but also as the object he *would be* in various *counterfactual circumstances*, i.e. in other possible worlds.⁴⁰ Accordingly, I think we may say that Kofi Annan is the object that falls under the huge conjunctive concept (Begriff)

$$\&_{i\omega\tau} F_i^{\omega\tau}(\xi).$$

(where τ is as above and ω ranges over worlds). Now, my answer to the question, What is a possible world?, is, obviously, the following: A possible world is an object that falls under a huge (complete) conjunctive concept

³⁹ Of course, I am here applying Leibniz' account of substances – cf. chapter 4 below.

⁴⁰ Of any object (substance), God can form what I shall in chapter 4 call a *supercomplete individual concept*.

(Begriff)

$$\&_{\text{int}} F_i^{\xi\tau}(t)$$

(where t ranges over individuals).

To return to the comparison between the standard approach and my account, the notion of an *intension* of an expression, in the sense apparently deriving from Carnap (1947), is important in the usual possible worlds semantics. Intensions (on the Carnapian construal) are functions from worlds to extensions. The *extension* of a *singular term* in the world w is the object picked out by this term in w – or really, the alethic slice (of an object) picked out in w . The extension of a (p -place) *predicate* in w is the set of (p -tuples of) objects – or really the set of (p -tuples of) slices of objects – that fall under this predicate. The extension of a *sentence* in w is the truth value this sentence has in w . Thus, the intension of a singular term is a function from worlds to slices(-in-a-world), the intension of an p -place predicate is a function from worlds to set of p -tuples of slices, and the intension of a sentence, often called a *proposition*, is a function from worlds to truth values.⁴¹

The basic technical features of the Fregean approach presented above are very much similar to those of standard possible worlds semantics. For example, in the latter the truth condition for the statements of the form "Necessarily, S " is as follows:

"Necessarily, S " is true in the world w (on a model M), if and only if

⁴¹ Intensions of sentences are here said to be functions from possible worlds to truth values. I think it should really be said that they are functions from possible worlds to *slices* of truth values – after all, the intension of any name of an abstract object such as the number nine is apparently regarded as a function from worlds to slices of number nine. If 9 has slices, then, evidently, the True should have slices as well! I shall return below to this highly implausible doctrine that abstract objects such as numbers and truth values are sliceable.

(on M) " S " is true in every world.

This is imitated in my approach's analysis of such statements, which is, as we have seen above, the following:

Necessarily, S , if and only if $\forall xS$.

Of course, there is nothing new in this modification of the usual possible worlds account into an approach in which we quantify over possible worlds – see e.g. David Lewis' well-known paper "Counterpart Theory and Quantified Modal Logic" (1968) and his book *The Plurality of Worlds* (1986). In view of this direct correspondence between possible worlds semantics and the present Fregean approach, it is not surprising that e.g. the intension of a predicate, say, 'bald', has an equivalent in the Fregean approach, viz., roughly, the Bedeutung of the Begriff $\text{bald}^{\xi}(\xi)$; for whenever the w -slice, a_w , of the object a is included in the w -intension of 'bald' (i.e. whenever $a_w \in \text{Int}^{\text{bald}^w}(w)$), $\text{bald}^w(a)$ is the True.

2.5 All truths are timeless

Frege states over and over again his view that truths (and falsehoods), i.e. true (and false) Gedanken, are absolute, timeless, eternal, immutable, objective and independent of thinkers (and of the world in general). For example, in the *Vorwort* of the first volume of the *Grundgesetze* (1893) Frege writes (GG.1 xv-xviii):

Being true is different from being taken to be true [--]. There is no contradiction in something's being true which everybody takes to be false [--]. Being true is thus independent of being acknowledged by somebody or other [--]. One could scarcely falsify the sense of the word "true" more mischievously than by including in it a reference to the subjects who judge. Someone will now no doubt object that the sentence "I am hungry" can be true for one person and false for another. The sentence, certainly – but not the *Gedanke*; for the word "I" in the mouth of the other person denotes a different man, and hence the sentence uttered by the other person expresses a different *Gedanke*. All determinations of the place, the time, and the like, belong to the *Gedanke* whose truth is in point; its truth itself is

placeless or timeless [--]. For me, what is true is something objective and independent of the judging subject [--]. For me there is a domain of what is objective, which is distinct from that of what is actual [*wirklich*] [--].

In "*Der Gedanke*" (1918), we find several very important passages (KS 354, 358-9, 361 / CP 363, 368 and 370, respectively):⁴²

Gedanken are neither things in the external world nor ideas [*Vorstellungen*]. A third realm must be recognized. [--] For example, the *Gedanke* we have expressed in the Pythagorean theorem is timelessly true, true independently of whether anybody takes it to be true. It needs no owner.

In thinking we do not produce *Gedanken*, we grasp them. For what I have called *Gedanken* stand in the closest connection with truth. What I acknowledge as true is in my opinion true quite apart from my acknowledging its truth or even thinking about it. [--] 'Facts, facts, facts' cries the scientist if he wants to bring home the necessity of a firm foundation of science. What is a fact [*Tatsache*]? A fact is a *Gedanke* that is true. [--] The work of science does not consist in creation, but in the discovery of true *Gedanken*. [-- T]he truth of a *Gedanke* is timeless. Therefore that truth cannot have come to be only upon its discovery.

The *Gedanke* we express by the Pythagorean theorem is surely timeless, eternal, unvarying. But are there not *Gedanken* which are true today but false in six months' time? The *Gedanke*, for example, that the tree there is covered with green leaves will surely be false in six months' time. No, for it is not the same *Gedanke* at all. The words 'This tree is covered with green leaves' are not sufficient by themselves to constitute the expression of a *Gedanke*, for the time of utterance is involved as well. Without the time-specification thus given we have not a complete *Gedanke*, that is we have no *Gedanke* at all. Only a *Satz* with the time-specification filled out, a *Satz* complete in every respect, expresses a

⁴² See also e.g.

GL VI-VII, §46 (1884)

KS 122-3 / CP 134 (1891)

GG.I xxiv (1893)

KS 212-3 / CP 230 (1895)

KS 362 / CP 372 (1918)

KS 367, 371 / CP 377, 382 (1919)

NS 1-7, 87, 115, 137-8, 142-50, 189-90, 202, 207, 214, 223, 271 / PW 1-7, 78, 105, 127, 131-8, 148, 174, 186, 190, 198, 206-7, 251 (1884-1915);

BW 72, 121, 125 / PC 44, 191n69, 78 (1900-14).

Gedanke. But this Gedanke, if it is true, is true not only today or tomorrow but timelessly. Thus the present tense in 'is true' does not refer to the speaker's present; it is, if the expression be permitted, a tense of timelessness. [--] The time-specification that may be contained in the Satz belongs only to the expression of the Gedanke; the truth, which we acknowledge by using the assertoric Satz-form, is timeless.

On Frege's view, Gedanken are independent of language and the mind: They belong to a "third realm" of entities, as opposed to the other two realms of "the things in the external world" and the "ideas" or representations (*Vorstellungen*) of our inner world (see especially KS 351-4 / CP 360-3; 1918). A Gedanke, an object in the third realm, is true or false objectively and timelessly or eternally.

Let us try to be absolutely clear of what Frege is saying, by a temporal consideration of the sentence,

(28) Ent is covered with green leaves,

where 'Ent' names a certain tree. If we have only the temporal aspect in view (that is, if we so to speak consider the history of the actual world), (28) expresses a Gedanke only if the moment of time in which (28) is considered is definite. Let us supplement (28) as follows:

(29) Ent is covered with green leaves at noon on June 1, 1999,

or, with obvious shorthands,

(210) $C^n(e)$.

Now, the Satz (29) may be taken to express a Gedanke. Assuming that this Gedanke is true, it is of course true *simpliciter*, without any reference to anything that is not explicit in (29) – this is precisely what is meant by the requirement that a Satz must be complete in every respect if it is to express a Gedanke (which of course is itself, being an object, complete). In particular, there is not much sense in asking whether (29) is, say, true at noon on

December 1, 1999, for (29) is *simply* or *plainly* true and thus any further specification of an instant in which (29) is to be considered is pointless.

This is exactly what the timelessness of a truth (or falsehood), such as the one expressed in (29), consists in – nothing is a truth unless it is fully definite, that is, definite also with respect to time. Of course, it may be insisted that an answer be given to the question whether (29) is true at noon on December 1, 1999. Naturally, if an answer must be given, it is that it is true at that time – and at any time – because it is true *simpliciter*, independently of time. The fact that this answer must be given to the question of the truth value of (29) at various times is the reason why it may also be said that Gedanken, like the one expressed in (29), are true *omnitemporally*, or *sempiternally*, i.e. true at all times; but it should be realized that it is more to the point to say that truths are timeless or atemporal than to say that they are omnitemporal.⁴³

2.6 All truths are worldless

I wish to extend Frege's view from temporal modality to alethic modality. This extension is indeed mine, for Frege nowhere shows any inclination to the analysis of alethic statements, not at least in the manner standard today.⁴⁴ In the early *Begriffsschrift* (1879) Frege writes that to make a statement to the effect that something is necessary – to make an *apodictic judgement* – is to "give a hint about the grounds" of a judgement (BS §4). He continues, however, that apodictic judgements do not concern him since they do not "affect the conceptual content of the judgement". Frege is apparently following here Kant,

⁴³ Cf. here e.g. von Wright 1979, 241-2.

⁴⁴ Frege's lack of interest in the possible worlds analysis of modal notions (or in possible worlds in general) is to some extent surprising, since Frege definitely knew at least some of Leibniz' writings. Frege refers very sparingly to other philosophers; but he refers to Leibniz rather often, in fact by far more often than to any other philosopher. Still, as indicated, no trace of Leibniz' notion of possible worlds is present in Frege's writings.

who writes in *Critique of Pure Reason* as follows (A 74 / B 99-100):

The *modality* of judgments [i.e. their being necessary or possible --] contributes nothing to the content of the judgment [--], but concerns only the value of the copula in relation to thought in general.

Kant and Frege apparently construe modal statements such as,

It is necessarily true that $7 + 5 = 12$,

as normal assertoric statements added with a "hint" of the mode in which they are regarded to have a truth value; e.g. in connection with the given apodictic statement it is said that there are absolutely sure grounds for taking the assertoric statement " $7 + 5 = 12$ " as true. An "apodictic proof" is for Kant a proof in which a conclusion is seen with absolute certainty to follow from the premises.⁴⁵

The reason for Frege's aversion of other possible worlds or alternative counterfactual circumstances is probably that the talk of what might have been true in some counterfactual circumstance appears to Frege as a useless speculation in which the very starting point – the "counterfactual circumstance" – is flawed because it is something that simply does not obtain. For Frege, the only point of making inferences is to acquire knowledge; therefore, as he often explicitly states, we cannot properly even talk about inference if the premises are not true.⁴⁶ Invoking counterfactual circumstances

⁴⁵ See e.g. A 734 / B 762. For a discussion of Frege's assertions concerning alethic modalities, and of Kant's apparent influence on these assertions, see Haaparanta 1988 (247f., 262f.).

⁴⁶ See, for example,
 KS 303-8, 319-20 / CP 318-23, 335-8 (1906)
 KS 364 / CP 375 (1919)
 KS 389-90 / CP 402-3 (1923)
 NS 195 / PW 180 (1906)

(or possible worlds or situations) is like pretending that something were the case, which is not the case – on Frege's view this is totally useless and even mistaken approach just because if one starts from falsehoods, one cannot acquire knowledge, and knowledge is the point of all investigation.⁴⁷

The admittedly un-Fregean extension I have in mind may be stated simply as follows: Having seen that the truth expressed in (29)-(210) is timeless, let us say, analogously, that every true *Gedanke* (and every true *Satz*) is *worldless*, or true independently of possible worlds.

Especially the following passage from Frege's paper "*Über die Grundlagen der Geometrie*" (1906) gives some support for the extension of temporal "stability" to alethic one (KS 313-4 / CP 329-30):

NS 220, 263-5 / PW 204, 244-6 (1914)

NS 281 / PW 261 (c. 1924)

BW 118 / PC 182n7 (1910)

BW 127 / PC 79 (1914)

BW 30, 34 / PC 16-7, 20-1 (1917).

⁴⁷ Frege's reluctance to consider possibilities is clearly manifested in his attitude towards the issue of Euclidean vs. non-Euclidean geometry. In a posthumously published short piece called "*Über Euklidische Geometrie*", written probably around 1899-1906, Frege writes (NS 183-4 / PW 169):

One cannot serve both truth and untruth. If Euclidean geometry is true, then non-Euclidean geometry is false [-]. The question at the present time is whether Euclidean or non-Euclidean geometry should be struck off the role of the sciences and made to line up as a museum piece alongside alchemy and astrology. If one is content to have only phantoms hovering around one, there is no need to take the matter so seriously; but in science we are subject to the necessity of seeking after truth. [-] Well, is it Euclidean or non-Euclidean geometry that should get the sack? [-] Do we dare to treat Euclid's *Elements*, which have exercised unquestioned sway for 2000 years, as we have treated astrology. [- If] we can put Euclid's axioms forward as being neither false nor doubtful [-] non-Euclidean geometry will have to be counted amongst the pseudo-sciences [-].

As I already indicated, Frege's viewpoint is as follows: Since we should always inquire into truths – we should try to obtain pieces of *knowledge* – what point can there possibly be in starting from falsehoods? If the statements of Euclidean geometry are known to be true – because they are properly inferred from true axioms – then the statements of non-Euclidean geometry are not true – why should we take the latter, i.e. nontruths, as objects of our study? (However, cf. section 2.10 below.)

What does 'the Satz obtains' mean? Surely that the Satz expresses a true Gedanke. But a real Satz expresses a Gedanke. The latter is either true or false: *tertium non datur*. [Footnote:] For here we are in the realm of science. In myth and fiction, of course, there may occur Gedanken that are neither true nor false but just that: fiction. [End of footnote.] Therefore that a real Satz should obtain under certain circumstances [*Umstände*] and not under others could only be the case if a Satz could express one Gedanke under certain circumstances and a different one under other circumstances. This, however, would contravene the demand that signs be unambiguous [*eindeutig*] [--]. A pseudo-Satz [*uneigentlicher Satz*] does not express a Gedanke at all; consequently, we cannot say that it obtains. Therefore it simply cannot happen that a Satz obtains under certain circumstances but not under others, whether it be a real Satz or a pseudo-Satz. [--] A Satz that holds only under certain circumstances is not a real Satz.

Expanding then on (29), we have,

(211) Ent is covered with green leaves at noon on June 1, 1999, *in the actual world*.

Let us now ask whether the true Gedanke this expresses is true in an arbitrary world w different from the actual world. I think this is fully analogous with the question whether (211) is actually true at some arbitrary moment of time, t , distinct from the noon, June 1, 1999. Note that (211) is in fact a fully explicated version of (29), for in connection with (29) we assumed that we are considering only the history of the actual world. Thus, to ask whether (29) is true at t , is to ask, more fully, whether (211) is true at t . The answer to this question is, as we have seen, in the affirmative.

Now, with regard to (211), it is utterly easy to pretend, as it were, that the state of the actual world at t is the state of w at the instant *the noon on June 1, 1999*. Then the question, Is (211) true at noon on June 1, 1999, in w ?, is completely on a par with the question, Is (211) true at t in the actual world? Since — on the assumption that (211) is true — the answer to the latter question is *Yes*, the same answer is completely natural to the former question as well. This means that it is natural to say that (211) is not only timeless and omnitemporal, but also *worldless* and necessary.

As I have explained above, it is Frege's view that to say that something has a truth value is to treat it as fully definite. In considering counterfactuality, it is natural to hold that this includes definiteness with respect to the world as well, which is what (211) intends to convey. When we consider whether (211) is necessary, we consider its truth value in all worlds. However, (211) is already definite with respect to possible world, thus, the addition "in the world w " to (211) is completely useless: We might say that there is no room for still another world besides the actual one in (211). To put it bluntly, (211) is necessarily true (at any time) because it is true in every world (at any time) that Ent is covered with green leaves in the actual world at noon on June 1, 1999 – or, what is in fact more accurate and preferable, (211) is "simply" or "plainly" true, i.e. true timelessly and worldlessly. It could be said that the omneworldness (i.e. necessity) and sempiternity (or alwaysness) of (211) are not genuine but are only parasitic on worldlessness and timelessness.

Let us consider also the alethic status of the classic example,

(212) I am here now.

I think this is non-contingently true whenever uttered. For what a speaker means by (212) is of course,

(213) I am here now *in the actual world*

(just as a serious utterer of "I am bald" does not mean that he or she is bald in some unmentioned world at some unmentioned time, but means that he or she is bald presently in the actual world). As above, it is now seen from the explicated form (213) of (212) that it is true worldlessly (as well as timelessly).⁴⁸

⁴⁸ The obvious objection is, "Of course (212) is only contingently true for its utterer might be elsewhere at that time". I shall deal with this objection later – suffice it to say for now that my position is as follows: (212) expresses a necessary (or more strictly speaking,

On the basis of the discussion above we may say that all Sätze (statements) – that is, fully articulated expressions of Gedanken – are, whenever referential at all, *rigid*, and even *strongly* so. Here the rigidity of a Satz means, of course, that the Bedeutung of the Satz – its truth value – is the same for all worlds; and all Sätze, e.g. (211), are strongly rigid, i.e. have the same truth value in *every* world (without "gaps"): E.g. (211) is true – i.e. the Gedanke (211) expresses is true – even in worlds where Ent does not exist (as well as at "Entless" moments of time).

2.7 Abstract discourse and empirical discourse

It may be instructive to compare the empirical examples I have considered so far to an example from the abstract discourse of mathematics. The Satz,

(214) The number nine is greater than the number seven,

expresses the true Gedanke that $9 > 7$. I think it is extremely plausible to view such a truth as totally independent of any worlds, times, or any contextual factors anybody may invent. The present approach brings this up in a most natural and illuminating manner, for consider:

(215) Necessarily, the number nine is greater than the number seven.

Since 9 and 7 are omnixistent logical objects and since the relation $\xi > \zeta$, holding only between numbers, is an *essential* (or world-independent) relation, the formalization of (215) is,

(216) $\forall x(9 > 7)$.

worldless) truth whenever uttered, even though its utterer indeed could be elsewhere at that time.

We immediately see that this is logically equivalent with the mere (214). Certainly, this is exactly how it should be, due to the abstract nature of mathematical discourse.⁴⁹

It may at first sight seem that in empirical discourse the claim that all truths are necessary, or the claim that in such discourse we have a result paralleling the equivalency of (214) and (216), is not at all as it should be. For consider again the example (211), i.e. "Ent is covered with green leaves at noon on June 1, 1999, in the actual world", or,

$$C^{\alpha}(e).$$

Again, we see immediately that this is equivalent with,

Necessarily, Ent is covered with green leaves at noon on June 1, 1999, in the actual world,

or,

$$\forall xC^{\alpha}(e).$$

This result may seem highly unintuitive, but I think it indicates only that *the discourse of truths* is in general abstract – and in my opinion there is nothing odd about this.

⁴⁹ In modal systems weaker than S5 it is seen that on the natural – or in fact, forced – assumption that the alternativeness relation is reflexive – that is, on the assumption that whatever is necessary is true – (214) and (215) are equivalent; that is, "Necessarily, $9 > 7$ " is *T-equivalent* with the mere " $9 > 7$ ". (In fact, even the weaker assumption that the alternativeness relation is *serial*, i.e. that every world has at least one alternative, i.e. that whatever is necessary is possible, would be enough.)

2.8 The stability of the truth value of a belief

I have argued above that for Frege bearers of truth values, viz. Gedanken, are *stable* with respect to truth value: A Satz, i.e. a full expression of a Gedanke, refers to a truth value atemporally and worldlessly, or, if you prefer, a Satz picks out the same truth value at every time in every world. In short, all truths and falsehoods are necessary (or better, worldless). Those who wish to resist this claim must obviously hold that truth value bearers – whatever they are taken to be – are not stable in this way: It is possible for an item that is capable of being true or false to be true in some possible worlds and false in others.⁵⁰ In this section, I shall explore this matter of the stability of bearers of truth values from the point of view of *beliefs*. My aim is to show that a careful reflection on the *sameness of belief* in fact strongly supports the stability view.

According to the standard approach to beliefs the items that are believed, the *pieces of belief*, or the objects of belief, are items that are capable of being true or false. The rationale behind this view is of course that beliefs may be said to be true or false – this makes it natural to say that what is believed is a (possible) bearer of a truth value, or, in other words, that a belief may have a truth value. Standardly, this is expressed by saying that a *proposition* is what is believed, and that propositions are possible bearers of truth values – it is commonplace to say, after Russell (1940), that belief is one of *propositional attitudes*. However, there is a disagreement over the nature of the items that are believed and, furthermore, some philosophers do not wish to recognize propositions at all. Therefore, I try to be neutral and talk about beliefs, without mentioning propositions.⁵¹

⁵⁰ If temporal instability is advocated as well – which is not standardly done nowadays – this is taken to hold also for moments of time.

⁵¹ That is, without using the word "proposition". Those who deny that there are propositions – whatever they think they mean by this – probably still admit that there are beliefs.

According to Frege, a belief – in the sense of what is believed – is a *Gedanke* (and thus, *Gedanken* serve as "propositions" for Frege). To say that a belief is true is to say that the *Gedanke* that is thus believed is true. To say that a *Gedanke* is true is in turn to say, *not* that the *Gedanke* in question has the *property* of being true, but that the *Bedeutung* of a *Satz* expressing that *Gedanke* is the True (exactly in the same sense in which the *Bedeutung* of the name 'Kofi Annan' is Kofi Annan). That is, Frege contends that 'true', as used e.g. in "This belief is true", is not really a predicate but connects a *Gedanke* and a *Bedeutung* (i.e. truth value the True or the False). Frege's clearest statement of this can be found in the manuscript "*Einleitung in die Logik*" of 1906 (NS 211 / PW 194).⁵²

If we say 'the *Gedanke* is true', we seem to be ascribing truth to the *Gedanke* as a property. If that were so, we should have a case of subsumption. The *Gedanke* as an object would be subsumed under the *Begriff* of the true. But here we are misled by language. We do not have the relation of an object to a property, but that of the *Sinn* of a sign to its *Bedeutung*.

As indicated above, a *Satz* names a *Gedanke* and thus names also a (possible) belief. Since *Gedanken* are on my Fregean account timeless and worldless, this account is committed to the following claim:

- (217) The truth value of a belief is *stable*: A true belief is true timelessly and worldlessly, or, if you like, is true at all times and in all worlds, i.e. true always and necessarily (and similarly for false beliefs).

Now, (217) appears as highly implausible, or it at least seems to contravene the

⁵² See also

KS 150 / CP 164 (1892)

KS 345, 347 / CP 354, 356 (1918)

NS 137, 139, 142, 150, 153 / PW 126, 128, 131, 138, 141-2 (1897)

NS 251-2 / PW 233-4 (1914)

NS 271-2 / PW 251-2 (1915)

BW 245 / PC 163 (1904).

common way of speaking, for the following is an entirely natural thing to say:

A belief that is true in some circumstance may be false in others.

For example, the true belief that Kofi Annan is presently not bald *would* be false *if* Kofi Annan *were* bald (or so it is said). Thus, it seems evident that the Fregean claim (217) is mistaken: Beliefs are not stable over worlds (nor over instants of time?) with respect to truth value. The standard view involving instability wins an initial point against Frege's view: At least some beliefs, and thus some bearers of truth values, are unstable (or so it seems).

However, I think we should *not* say that the items that are believed (i.e. the items that are capable of having a truth value) are unstable. This is because on a closer scrutiny this view leads to trouble, not only with respect to belief but also with respect to knowledge and proof or argument (as we shall see in the following sections). I think the Fregean claim of the stability of the truth value of a belief is more plausible than the "natural" view involving instability. In short, it will be seen that it is *not* the *same* belief – "same" in the sense of *numerical identity* – that is true in some worlds and false in others; instead, just as I, following Frege, have suggested, numerically the same belief retains its truth value through worlds, as well as through moments of time, or, more accurately, the truth (or falsehood) of a belief is independent of worlds and times, or lies *outside* worlds and times. Behind this view is the intuition that to believe something is to believe something definite in the sense that a true belief a believer has at some moment of time in some world does not turn into a false belief at some later moment of time or in some other world. I shall now try to justify this intuition.

It is instructive to begin with a temporal case. Assume that a believer has, at the moment of time t , the true belief that Kofi Annan is not bald. Let s be some later moment of time when Kofi Annan *is* bald. It may now be said that at s our believer's belief that Kofi Annan is not bald is false. But is this the *same* belief as the belief, at t , that Kofi Annan is not bald? If the answer is in the

affirmative, it indeed seems that the very same believed bearer of a truth value changes its truth value over time. However, I think it is not the same belief, not at least in the sense of numerical identity. What the believer believes at t is not something indeterminate of the sort *that Kofi Annan is not bald at the moment of time ξ* , but is something determinate in which the moment of time of Kofi Annan's not being bald is regarded as fixed – most likely, the believer believes, at t , that Kofi Annan is not bald *at t* – accordingly, let us say that the believer has at t a *t-belief* that Kofi Annan is not bald. At s , when Kofi is bald, the believer may believe something quite different, e.g. the false believe that Kofi Annan is not bald *at s* (or, the *s-belief*). Indeed, the believer may have, at s , both the *t-belief* and the *s-belief* that Kofi Annan is not bald – and if the believer's *t-belief* and his or her *s-belief*, at s , were regarded as the same belief, it would seem that the same believer could believe something that is both true and false (at the same time), which is an intolerable result. Further, it may easily happen, at s , that the believer has the *t-belief* but does not have the corresponding *s-belief*, which with the claim that these are in fact the same belief leads into the contradiction that the believer simultaneously both has and does not have a certain belief.

The case with two distinct worlds is analogous. Kofi Annan is presently not bald in the actual world – let our believer truly believe, presently in the actual world, that Kofi Annan is presently not bald. It is then standardly said that this very same belief *would* be false if the circumstances were appropriately different, viz. if Kofi Annan were bald. Again, I wish to challenge this claim of the sameness of these beliefs and show that we have a good reason to say that the belief in the actual world that Kofi Annan is presently not bald is in fact distinct from the belief in some other world, w , that Kofi Annan is presently not bald.

When our believer believes that Kofi Annan is presently not bald what is it that he or she believes? Is it what might be called a *contextless* belief, the belief which the believer might present to himself or herself by the words "No matter what the circumstances, Kofi Annan is presently not bald"? Of course not –

quite the opposite. What the believer believes is something determinate which may be expressed by something like the following:

(218) *Presently, here, as this world now stands*, Kofi Annan is not bald.

Now, our believer is situated in the actual world α and he truly believes what he might express by (218). Of course, he or she probably would not say (218) in full, but only the part "Kofi Annan is not bald" – however, as I just pointed out (218) is what our believer really believes, when his or her belief is more fully articulated. Imagine then that our believer is in the world w , where Kofi Annan *is* bald. His or her false belief in w that Kofi Annan is presently not bald is again expressible by the sentence (218). Is this w -belief, as we may call it, the same belief as the corresponding α -belief? Of course not, for the false belief in w may also be described by the words, "Presently, here, as this world now stands, Kofi Annan is not bald" – (218) contains indexical expressions "presently", "here", "this world", "now", and accordingly, the belief in the actual world α that Kofi Annan is presently not bald *concerns* the actual world α (that is, the way the world actually is), while the belief in the world w that Kofi Annan is presently not bald concerns in the same way the world w . In short, these are distinct beliefs, because the first is expressible as

$$\sim B^{\alpha}(a)$$

and the second as

$$\sim B^w(a).$$

There is in my opinion no real justification in regarding these as the same belief.

To be sure, we may call these *nominally* the same belief and perhaps even beliefs that are of the same kind – but if I am right we should not call these literally or numerically the same belief. To say that an α -belief is literally the

same belief as the corresponding w -belief is like saying that since the present Dalai Lama is the present secretary general of the United Nations in the world u , the present secretary general *in the actual world*, viz. Kofi Annan, is numerically the same as the Dalai Lama.

A belief, or at least an empirical or indexical belief, always contains, however implicitly, a reference to the possible world the believer is situated in; and this world is part of what he or she believes. The believer most certainly does not have a contextless belief of the sort *Kofi Annan is presently not bald in a world ξ* , for such a contextually indeterminate item does not amount to a definite object of belief at all. In short, an empirical belief concerns in part the world, or, in other words, the world is a part of the subject matter of an empirical belief. In terms of the analogy used above, just as we can say that Kofi Annan has in α the same *position* as the Dalai Lama has in u , but not of course that Annan is literally or numerically the same as the Dalai Lama, we can say that the belief in α that Kofi Annan is presently not bald is nominally the same or same in kind as the belief in w that Kofi Annan is presently not bald, but not that it is literally or numerically the same belief.

The following consideration further confirms my Fregean claim of the stability of belief over worlds. Our believer may very well *doubt* in the actual world α whether Kofi Annan would be presently nonbald in some other circumstances or world v (e.g. in a world where practically all persons are bald). This is in disagreement with the claim that what the believer believes in v is the same piece of belief as the one he or she believes in α : If he or she doubts in α whether Kofi Annan is (or were) presently nonbald in v , we most certainly cannot say that this is the same belief-item as the one he or she believes when believing in α that Kofi Annan is presently not bald – if these were the same belief, the believer would simultaneously both doubt and believe numerically the same belief, which is absurd.

My conclusion is that my central claim is vindicated: The truth value of a belief stays constant not only through times but also through worlds, and when we

say of a true belief that it could be false if the circumstances were different we do not mean that it is literally the same belief that could be false, but that a belief that is same in kind as the original true one could be false. To put this more precisely, while *that Kofi Annan is presently not bald in a* , or $\sim B^a(a)$, is a true belief, the (distinct) belief *that Kofi Annan is presently not bald in w* , or $\sim B^w(a)$, is a false one, for some world w . What is common to these beliefs, corresponding to the locution "same in kind" is of course the Begriff $\sim B^{\xi}(a)$, which is not an item that can be believed, due to its indefiniteness.

2.9 Knowledge and stability

All this applies, even more compellingly, to knowledge. According to the standard conception, what can be believed can also be known – knowledge is true justified (or reliable) belief.⁵³ That is, a piece of knowledge is a bearer of a truth value.

Now, assume I have obtained the piece of knowledge that Kofi Annan is presently not bald. Do I express this very same piece of knowledge by "Kofi Annan is not bald" in the world w which is like the actual world except that Kofi Annan is bald (as the proponents of unstable truth seem to claim)? Of course not. For one thing, it is not even true and thus not even a piece of knowledge, in w , that Kofi Annan is not bald. But even if we get around this problem – e.g. by means of talking only about a *possible* object of knowledge – I think the present consideration connected to knowledge shows how implausible it is to view the bearers of truth values, i.e. possible pieces of

⁵³ (i). The alleged problems in the justification or reliability component of this classic analysis need not concern us. What matters here is only that what is knowable is a bearer of a truth value.

(ii). Of course, I am here talking about a conception of knowledge for which absolute certainty is not required. If this requirement is made, it appears that we cannot know practically anything substantial.

knowledge, as unstable: When something is known, some fixed and determinate possible object of knowledge is known to be true – if there is some sort of indeterminacy in what is (allegedly) known, we hardly call this knowledge. In view of this, I think it is simply a mistake to claim that *merely* due to circumstances this very same knowledge is lost (that is, only because allegedly the same object of possible knowledge is false under these circumstances).

Temporal example may again be used to illustrate this matter. I know today that Kofi Annan is not bald. That Annan will be bald tomorrow has nothing to do with this piece of knowledge – Annan's losing his hair overnight does not in itself cause me to lose the knowledge I have today, that Annan is not bald today. Despite Annan's turning bald, I may know also tomorrow that Annan is not bald today, and I may express this knowledge tomorrow by, "Kofi Annan was not bald yesterday". I may or may not gain tomorrow the knowledge that Annan is bald then, but this is certainly totally insignificant to my knowledge today (or on any day) that Annan is not bald today. In the same manner, when something is known in a world, *that* particular piece of knowledge is not at all affected by the fact that there are worlds in which *something else* than the truth that is known in the first world is false; for example, my knowledge that Kofi Annan is presently not bald in the actual world is not in the least affected by the fact that I cannot in any world where Annan is bald know that he is presently not bald in that world – the latter is simply a different possible object of knowledge. The following claim is in my opinion simply absurd: "We have this particular piece of knowledge but had the world been different in this-and-that way so that this piece would have been false, we could not have this piece of knowledge, for a falsehood cannot be known." All pieces of knowledge are fully determinate, and accordingly, pieces of empirical knowledge as it were *include* worlds.⁵⁴

⁵⁴ That a wrong way of looking at the matter of pieces of knowledge is subject to lead to pseudo-problems is nicely displayed by the following ridiculous argument that God's knowledge and belief is inconsistent with his immutability (Quinn 1995, 608): On a

In this connection, it is interesting to consider the standard conception of knowledge in ancient Greece. According to this conception, genuine knowledge requires absolute immutability of its objects, i.e. we can have genuine knowledge only of what is eternal, changeless, still-standing.⁵⁵ For Plato, the objects of knowledge are changeless Forms.⁵⁶ Aristotle in turn holds that genuine or "scientific" knowledge concerns "something which cannot be other than it is" (*Posterior Analytics* I.2, 71b15). A clear exposition of this view can be found in the *Nicomachean Ethics* (VI.3, 1139b18-23):

What *knowledge* is, if we are to speak precisely and not follow metaphorical language, is evident from the following. We all believe that the thing which we *know* cannot be other than it is; and as for the things which may be other than they are, when they are outside of our observation, we are not in a position to know whether they exist or not. Thus the object of *knowledge* exists of necessity, and hence it is eternal; for all things which exist of necessity without qualification are eternal, and what is eternal is ungenerable and indestructible.

Aristotle's view amounts to the claim that strictly speaking only necessary truths can be known.⁵⁷ Since the empirical world is constantly changing, and empirical facts do not obtain of necessity (or so it at least seems), this stringent Greek conception leads directly into the implausible view that there can be no genuine knowledge (but only opinions or beliefs) of the empirical world or not at least of changing empirical *particulars*, as Aristotle himself confirms in

particular Tuesday God must know and hence believe that it is then Tuesday and not believe that it is then Wednesday, while on the next day he must know and hence believe that it is then Wednesday and not believe that it is then Tuesday. Thus, "God's beliefs change, and since change of belief is an internal change, God is not immutable". (Quinn does not argue in this way but only mentions this "argument".)

⁵⁵ See here e.g. Hintikka 1967, Woozley 1967 (196).

⁵⁶ See, for instance, *Parmenides* 135b-c, *Cratylus* 439d-440c. "Indeed, it isn't even reasonable to say that there is such a thing as knowledge, Cratylus, if all things are passing on and none remains" (440a).

⁵⁷ See also *Posterior Analytics* I.4 (73a21-2): "Since the object of pure scientific knowledge cannot be other than it is, the truth obtained by demonstrative knowledge will be necessary."

Posterior Analytics I.33 (88b31-4):

Scientific knowledge and its object differ from opinion and the object of opinion in that scientific knowledge is commensurately universal and proceeds by necessary connexions, and that which is necessary cannot be otherwise. So though there are things which are true and real and yet can be otherwise, scientific knowledge clearly does not concern them: if it did, things which can be otherwise would be incapable of being otherwise.

This view that the stability of truths (i.e. possible objects of knowledge) implies that the empiria (as particulars) is beyond genuine knowledge is a mistake – or at least Frege's approach helps us to see how knowledge of the empiria is possible on the stringent Greek standard of knowledge. For Frege, what are known are Gedanken and a Gedanke may *concern* or *be about* empirical particulars. That is, in Frege's approach the discourse of truths (and falsehoods) is the immutable domain the Greeks were after.⁵⁸ What we have in the immutable domain of knowable items may easily *be about* the ever-changing and perishing concrete particulars, and thus we can have genuine knowledge of these particulars, even on the demanding Greek requirements for genuine knowledge. Or, to put this in still another way, in the approach I have outlined *all* truths are necessary, or as I rather say, worldless or extramundane, and thus, all truths, including all empirical ones, can be known even on the stringent-looking Aristotelian condition that only necessities can be known. In Frege, the ancient Greek conception of knowledge is in a sense retained and even developed.

2.10 Proof and argument

I think also the notion of proof or argument shows that the bearers of truth value are stable. In this connection, Frege's paper "*Über die Grundlagen der*

⁵⁸ Well, this point is hardly a piece of news – Frege's theory of Gedanken is quite naturally regarded as platonic.

Geometrie" of 1906, as well as his much earlier manuscript "*Logik*" (c. 1884) are extremely interesting. In fact, some of Frege's statements in these papers are best corroborations of my claim that Frege could have advocated the stability of truth values with respect to worlds.

When something is proved or demonstrated to hold for good, it is shown that this something is true. In view of this, consider the claim,

- (219) We have this demonstration of something, i.e. this demonstration that something is true, but had the world been different in a relevant way we could not have had this demonstration because this something would have been false.

Of course, what is here at issue is not a demonstration of a mathematical truth, such as the Pythagorean theorem, for the truth of these, it is commonly agreed, do not in any way depend on possible worlds (or, as this is usually put, they are true in every world, i.e. are necessary). Rather, we must consider an empirical demonstration of, say, a natural law – let us take the law of inertia as an example, i.e. the law that matter retains its rest or its velocity along a straight line so long as it is not acted upon by an external force. Then, (219) becomes:

- (220) The law of inertia can be demonstrated to be true, but had the world been different in a relevant way we could not have had this demonstration because this law would have been false.

I claim now, with Frege, that it is entirely plausible to hold that all natural laws, as we know them, hold in all possible worlds (or better, they hold worldlessly), i.e. that (220) and (219) are false. Frege writes in the manuscript mentioned (NS 4-5 / PW 4-5):

In the sense in which we speak of natural laws, psychological, mathematical or logical laws, it is, strictly speaking, impossible for laws to change at all. For such a law, expressed in full, must include mention of all relevant conditions, in which case it will hold independently of time and place. The law of inertia, for instance,

claims to be valid for all times and regions of space. If it appeared not to be valid in, say, the neighbourhood of Sirius, we should assume that it had not been fully expressed, a condition having been overlooked which is satisfied here but not in the neighbourhood of Sirius. A genuine condition always contains something indefinite, and so, according to how this something is determined, it can assume the form of a true or false Satz. Thus if after some time the law of inertia no longer seemed to hold, this would be an indication that a further condition needed adding, a condition which had been satisfied up to a certain date but not subsequently.

From the point of view of a demonstration, Frege's position seems to be here as follows: We have this-and-this empirical demonstration that the law of inertia is true. This demonstration of course concerns how the world actually is. What is demonstrated, i.e. what the law of inertia really says, when expressed in full, is the following:

If the world is such-and-such-and-such, matter retains its rest, etc.

Surely, what is demonstrated is not merely the part following the comma, for when we say that it has been shown that the law of inertia holds, we do not mean that the statement "matter retains its rest ..." has been shown to hold regardless of contexts or worlds (i.e. regardless of any provisos). But then, the law of inertia is true in every world, for it is true in every world that matter retains its rest etc., *if the world is such-and-such-and-such*. This same holds for all natural laws: They are all true in all worlds (or rather, they are plainly or worldlessly true).

Perhaps the point may be expressed also by saying that *all* premises are *included* in a demonstration. Thus, if we attempted to demonstrate in a world where matter *does not* retain its rest etc. that matter *does* retain its rest etc. *in that world* (i.e. in the circumstances of that world), and failed in this attempt, this would not be the same (attempted) demonstration as the demonstration of the law of inertia, viz. the law that matter retains its rest etc., if the world is such-and-such-and-such: Different premises, different demonstration.

The following passage from the 1906 paper mentioned above Frege discusses

the "effect" of "circumstances" [*Umstände*] on Gedanken (KS 313-4 / CP 329-30):

[T]hat a real Satz should obtain under certain circumstances and not under others could only be the case if a Satz could express one Gedanke under certain circumstances and a different one under other circumstances. This, however, would contravene the demand that signs be unambiguous [--]. A pseudo-Satz does not express a Gedanke at all; consequently, we cannot say that it obtains. Therefore it simply cannot happen that a Satz obtains under certain circumstances but not under others, whether it be a real Satz or a pseudo-Satz. [-- Somebody who thinks otherwise perhaps does the following:] He interprets a Satz like this, and it obtains; he interprets it otherwise, and it does not obtain. [--] For example, let us take the Satz 'On a straight line there are at least two points!' Now let us interpret the word 'point' as foot, the words 'straight line' as worm, and the words 'there are' as has. [--] We have [thus] obtained something false [-- for] it simply depends on interpretation. But let us stop joking. A Satz that holds only under certain circumstances is not a real Satz. However, we can express the circumstances under which it holds in antecedent Sätze and add them as such to the Satz. So supplemented, the Satz will no longer hold only under certain circumstances but will hold quite generally.

One could hardly hope for a clearer statement than this that all Sätze are stable with respect to truth, with the consequence that all truths are stable.

Also elsewhere in the same paper Frege says that there is no plausibility in the talk of different "interpretations" of what is expressed, i.e. of Gedanken (and consequently, of Sätze), nor in the talk of having a proof of something which may later be interpreted in different ways (KS 301-4 / CP 315-8):⁵⁹

The word 'interpretation' is objectionable [in connection with Gedanken], for when properly expressed, a Gedanke leaves no room for different interpretations.

Mr. Korselt [writes]: 'Statements [Sätze] having the same wording should, if possible, be proved only once, even if they appear in different disciplines'. As if it were possible to have different Sätze with the same wording! This contradicts the rule of unambiguousness, the most important rule that logic must impose on written or spoken language. If Sätze having the same wording differ, they can do so only in their Gedankeninhalt. Just how could there be a single proof of different

⁵⁹ See also KS 318-23 / CP 334-9.

Gedanken? This looks as though what is proved is the wording alone, without the Gedankeninhalt; and as though afterwards different Gedanken were then supposed to be correlated with this wording in the different disciplines. Rubbish! A mere wording without a thought-content can never be proved.

[An] inference does not consist in signs [Zeichen]. [--] An inference simply does not belong to the realm of signs; rather, it is the pronouncement of a judgement made in accordance with logical laws on the basis of previously passed judgements. Each of the premises is a determinate Gedanke recognized as true; and in the conclusion, too, a determinate Gedanke is recognized as true. There is no room for different interpretations.

These passages imply an anticipatory criticism of the standard present-day approach to modality. For this approach appears to be *formalistic* in the following way. On the formal level, possible worlds are thought of as models and it is said, for example, that on the model of the actual world α , a "proposition" named by ' p ' is true (i.e. $M_\alpha \models p$), while on the model of some other possible world, w , this *same* proposition p is false (i.e. $M_w \not\models p$). It seems to me (and to Frege) that we should not in this way create an ambiguity, but to say rather that while p^α is true, p^w is false – and here p^α and p^w are of course different things: On Frege's view the first is the True and the second is the False, although they admittedly are connected by the shared Begriff p^{ξ} . In fact, the denial of ambiguity taken together with Frege's view that Sätze refer to truth values entail directly that Sätze, and thus also Gedanken, are stable.

As Frege says, it is absurd to think that what is proved somehow concerns only forms or figures – what is really proved to hold is something meaningful, a content, a Gedanke. This is one of Frege's basic arguments against formalistic logic and mathematics, i.e. against the view that in these disciplines we are dealing only with signs (or more properly, since signs of course *signify*, with mere forms or figures) and their manipulation according to something like *physical* transformation rules. For example, *modus ponens* would then go as follows. If you have a form like this:

$$p \ \& \ (p \rightarrow q)$$

then you are entitled to "infer" a form like this:

q

In reality, this is not an inference and formalistic logic and mathematics are completely on the wrong track. This is a theme Frege very often discusses.⁶⁰

To conclude this section, let us consider the following passage from one of Frege's letters to David Hilbert (1862-1943), written in 1900 (BW 75 / PC 48):

There is a logical danger in your speaking of, e.g. 'the parallel axiom', as if it was the same thing in every special geometry. Only the wording is the same; the Gedankeninhalt is different in every different geometry.

Now, different geometries are, basically, different models of the same subject matter. It is thus not at all far-fetched to think of possible geometries as a set of possible worlds (with the Euclidean geometry as the "actual world"). Then it may appear as natural to say that the parallel axiom is true only in some geometries, i.e. it is contingent with respect to geometrical possible worlds. Frege explicitly denies this. The parallel axiom, strictly so called, pertains only to the "actual geometry", i.e. to the Euclidean geometry. Frege holds – in my opinion correctly – that the parallel axiom is universally true, true with respect to *any* geometry, or to anything whatsoever, because it really says: "Only one

⁶⁰ See e.g.

GL X, §§ 16, 24, 43, 96, 99, 109 (1884)

KS 105-9 / CP 114-8 (1886)

KS 126-7 / CP 138-9 (1891)

GG.1 xiii (1893)

KS 211-7 / CP 229-32 (1895)

KS 251-3, 255-7, 259-60 / CP 262-3, 266-8, 271 (1899)

GG.2 §§ 68, 70, 86-90, 94-103, 107, 112-4, 126, 136, etc. (1903)

KS 283-4, 290, 301-3, 311-3, 323 / CP 295-6, 303, 315-7, 326-8, 339 (1906)

KS 329-32 / CP 346-9 (1908)

NS 13-4, 172-3, 179-80, 293 / PW 12-3, 158, 164-5, 273-4 (c. 1881-1924).

E-line can be drawn through a given *E*-point so that the *E*-line is *E*-parallel to a given *E*-line that does not contain the *E*-point." Here *E*-line, *E*-point, *E*-parallel are the Begriffe of a line, point and parallelity specific to the Euclidean geometry. Frege explicitly (and more precisely) spells this out in the first series of "*Über die Grundlagen der Geometrie*" (1903, KS 272 / CP 284):

Euclidean geometry presents itself as a special case of a more inclusive system which allows for innumerable other special cases – innumerable geometries, if that word is still admissible. And in every one in these geometries there will be a (first-level) Begriff of a point and all of these Begriffe will fall within the same second-level Begriff [viz., within *being a Begriff of a point in a geometry*]. If one wanted to use the word 'point' in each of these geometries, it would become equivocal [*vieldeutig*]. To avoid this, we should have to add the name of the geometry, e.g. 'point of the *A*-geometry', 'point of the *B*-geometry', etc. Something similar will hold for the words 'straight line' and 'plane'. [–] One could not simply say 'the axiom of parallels', for the different geometries would have distinct axioms of parallels. If the wording of each of these were the same, this would mistakenly have been brought about by the fact that one had simply said, for example, 'straight line' instead of 'straight line of the *A*-geometry'. This way of talking may veil the difference of the Gedankeninhalten, but it certainly cannot remove it.

The analogy to the general case of possible worlds is obvious. This supports again my claim that it is truly a Fregean move to regard Gedanken as alethically stable, or, as we can perhaps also say, *world-specific*.

2.11 Stability vs. instability

Mainstream possible worlds semanticists often say things like,

- (221) Many true propositions are not necessarily true (i.e. are false in some possible worlds),

and,

- (222) There are some items that are true but might be false (i.e. are false in some possible worlds).

Since by the word "proposition" these semanticists (or at least many of them) mean intension of a sentence (or statement), it seems that we may rewrite (221) as follows:

Many true intensions are not necessarily true (i.e. are false in some possible worlds).

Really? Are intensions of sentences – those functions from possible worlds to truth values – bearers of truth values, i.e. items that may be true or false?⁶¹ But is not the intension of a fixed sentence such as "Ent is covered with green leaves at noon on June 1, 1999" the *same function* with respect to every possible world? How could this same function – that is, the function itself, not any result of any application of this function – be true in some possible worlds and false in others?

Perhaps it is now said that (221) and (222) are somewhat loose expressions of what is really meant, which is that e.g. (221) is to be understood as interpreted in some unmentioned possible world, say, in the actual world, and (221) is thus more accurately expressed as follows:

Many propositions that are *actually* true are not necessarily true,

or, in "intension talk",

⁶¹ Construing "proposition" as a set of possible worlds – as is also often done – means that one should say: Many true sets of possible worlds are not necessarily true (i.e. are false in some possible worlds). Thus, a set of possible worlds may be said to be either true or false? I think it is at least very confusing to say both that propositions have truth values and also that propositions are sets of possible worlds. Under this construal it is usually said that a proposition is true in a possible world if that world belongs to that proposition. This sounds utterly absurd to me, for substituting 'a set of possible worlds' to 'proposition' in this statement we obtain: A set of possible worlds is true in a possible world (?), if that world belongs to that set of possible worlds.

Many intensions that give *true* as a result when applied to the actual world give *false* as a result when applied to some other worlds.

Likewise, (222) becomes, when formulated more carefully,

- (223) There are some items that are *actually* true but false in some possible worlds.

This would clearly mean that these semanticists are not really committed to the view that the intension-functions themselves are bearers of truth values: E.g. in (223) the quantification is over intensions, and it is not implied that these quantified-over intensions as such have truth values.

What, then, *are* these items that are bearers of truth values? It appears to be asserted that what may be said to be true is not an intension as such but an *intension as applied to a possible world* – indeed, this is precisely what an intension of a sentence is: a function from possible worlds to truth values. But now, it seems, *the Fregean point concerning worldlessness is conceded*: Take any truth *T*, i.e. something, whatever it is, that is true. It was just concluded that *T* is not a proposition in the sense of an intension of a sentence (even though possible worlds semanticists usually talk as if it were, cf. (221)-(222)). Let us now ask whether *T* is true in an arbitrary possible world *w*. Of course it is – note that we are not here talking about intension as a function, but rather about a definite result of an application of an intension. Since *w* was assumed to be an arbitrary world, and it was concluded that an arbitrary bearer of a truth value *T* is true in *w*, *T* must true in all possible worlds. We have thus proved that the mainstream possible worlds semanticists are really committed to the Fregean view of worldlessness: All truths are worldlessly (and thus necessarily) true.

Something must have gone wrong in the argument I just presented, for its conclusion was that the standard possible worlds semantics is also committed to the view that whatever is true is worldlessly and necessarily true. Surely, this

is something the champions of the standard account deny, and we are not entitled to expect that they have so badly misunderstood their own theory. So, let us try to analyse this matter more carefully.

We have, first, the view that bearers of truth value are alethically (and temporally) stable with respect to truth values, i.e. they have their truth values irrespective of (moments of time and) possible worlds. This view is exemplified by Frege, or so I have argued above. Employing in this section the word *proposition* for bearers of truth values – which of course is the common usage – we can say that for Frege propositions are Gedanken and are alethically and temporally stable. Secondly, there is the opposite view that propositions are not stable in this way, but are *unstable*. Of course, this could mean temporal instability, or alethic instability, or both. It seems to me that the standard, or at least the commonest, view is the one which combines temporal stability with alethic instability, or, perhaps more properly expressed, when alethic matters are considered the time parameter is usually taken as fixed, with the consequence that propositions are treated as temporally stable. At any rate, I shall primarily deal with alethic instability.

In the instability side we can distinguish two alternative versions, depending on the position towards the question, what exactly it means to say that a proposition is true or false. First, we have the position that a proposition can have a *property* of being true or false, and secondly, the opposite view that truth value is not a property of a proposition, but rather something like the referent of an expression of a proposition (which, as pointed out above, is Frege's view).

Taking the second version first, it is easy to see that its proponents cannot have any basis for the claim that propositions are unstable. For, considering the proposition expressed by "*p*", the instability claim means that *p* may be – or, let us assume that it *is* – true in one world, say α , and false in another, say w . More precisely, according to this theory the referent of '*p*' is in α the True and in w the False. However, we cannot then say that '*p*' names the same entity in

these worlds: In α it names the True, in w it names the False. Thus, there is no single proposition p here at all, but two separate propositions. Thus, there is no single proposition of which to claim that it is unstable.

Asking whether on the conception presently under discussion a proposition has this or that property (e.g. that of having the True as the referent of its expression) through worlds is like asking whether the heaviest horse (at t) retains its horseness through possible worlds. Of course, the proper reaction to this is to point out that although in all possible worlds the heaviest horse is a horse (at any time, modulo existence of the heaviest horse), there is no *single* object that is the heaviest horse through possible worlds: In different worlds, we have, or may have, different heaviest horses. That is, although

$$\forall xH^x(\text{theHH}^x)$$

is true, it is not the case that

$$\exists y\forall x(y = \text{theHH}^x).$$

The account under consideration is really committed to the intension view and thus what I said above in this section applies to it: When it is said that a proposition (i.e. intension of a sentence) is true, what is really meant is that it is true in a fixed possible world, e.g. in the actual world α (i.e. that it is actually true), or, more precisely, what is the True is (e.g.) proposition-as-applied-to- α (and not a mere proposition, i.e. intension); and such a proposition-as-applied-to- α is stable with respect to possible worlds (as I have pointed out above). Furthermore, this version can be subsumed under the Fregean theory I have put forward above: What is called a proposition, p , is really a Fregean Begriff p^ξ (which is a function from possible worlds to truth values), i.e. a Bedeutung of a sentence that expresses an incomplete Gedanke.

Let us see whether the other alternative, which views truth as a property of propositions, fares any better. In this alternative truth value is a (possibly)

changing property of a proposition, that is, a proposition is an entity through possible worlds that has, or at least may have, the property of being true in some worlds and the property of being false in others (and perhaps has neither property in some still other worlds). The heart of this account may be put as follows:

An expression of a proposition is a *rigid* expression referring to an object – the same in all possible worlds – that has (or may have) a different *truth-property* in different worlds.

For example, "Kofi Annan is not bald at noon on June 1, 1999" is regarded as an expression of a proposition that has the property *truth* (for example) in the actual world α and the property *falsity* in many other worlds.

A difficulty immediately arises with respect to the principle of indiscernibility of identicals (cf. section 2.4 above and section 2.12 below). This principle rules out the possibility of one and the same entity having contradictory properties; thus one and the same proposition cannot have both the properties of being true and being false. Further, propositions surely seem like being *abstract* entities, and abstract entities are immutable, and thus if a proposition has the property of being true, it should have it through and through, i.e. it should be stable.

However, perhaps there are some ways to get around these problems. First, it could be proposed that propositions as it were consist in alethic slices: A given proposition p is such that, say, the α -slice of it, α - p , has the property *truth*, while the w -slice of it, w - p , has the property *falsity* (where, again, w is a possible world distinct from α). As against this, I think it is completely preposterous to view abstract objects as consisting in slices. And, at any rate, on this view bearers of truth values are not claimed to be unstable after all: What is here said to be true or false is a slice, and different possible world have different slices (even when these slices result as an application of the same proposition-function), thus, one cannot say that *numerically the same* bearer

of truth value is unstable through possible worlds. The conclusion must be that this view is irrelevant to our present case, or at any rate shows nothing against the stability contention.

A more promising solution to the problem of contradictory truth-properties, as applied to propositions, is as follows: The one and the same proposition p has both the property of being α -true and the property of being w -false. But if this is the case, then propositions are not changeable after all, for the proposition p is *not* here said to have the property of being (simply) true in α and the contradictory property of being (simply) false in w , but is said to have all at once the properties α -truth and w -falsity, which of course are not contradictory – the contradictory property of e.g. α -truth is α -falsity.

However, I do not wish to appeal merely to the universal nonreality of change (deriving from the unrepachable principle of indiscernibility of identicals),⁶² because it is perhaps felt that this doctrine of changelessness is "too theoretical". Therefore, I turn to objections to the present approach that are independent of the (alleged) universal immutability.

One of further problems in the present view is that it is circular. It appears as futile, at least, to say that a proposition *has the property* of being true, or more precisely, the property of being, say, α -true. When something is predicated of something, it is always possible to ask, whether this predication is true, i.e. whether something is *truly* predicated of something. Therefore, it may be asked (and should be asked) what point is there in saying that the truth (or α -truth) is a property of a given proposition p , since the question, whether it is true that p has truth, inevitably arises. At any rate, one cannot *define* proposition as something that may have a truth value as a property, because for any proposition that is claimed to have *truth* it can be asked, whether it is true that it has *truth*.

⁶² I shall argue for this doctrine of changelessness more fully in the next section.

Of course, I am here repeating Frege's well-known contention that the notion of truth cannot be defined; one cannot say in any illuminating manner what it is to be true; truth is an inexplicable, primitive notion. In particular, the *correspondence theory of truth* does not say anything substantial, on Frege's view. According to the correspondence theory, truth is agreement or correspondence with something: Whatever it is – a "sentence", "statement", "proposition", "Gedanke", "belief", "idea", "judgement", "intension-as-applied-in-a-possible-world", etc. – that is true, it is true *in virtue of* corresponding to "reality" – a "fact", "obtaining state of affairs", "how things really are" or "the real world".

Frege's most important objection to the correspondence theory is that any attempt of defining truth is bound to be circular, and thus useless – which exactly shows that *to be true* is a primitive notion. Frege's point is that even if we said that *A* is true since it corresponds to *B*, it would still be possible to ask whether it is true that *A* so corresponds to *B*.⁶³ Frege puts this as follows (NS 139-40 / PW 128-9 (1897), KS 344 / CP 353 (1918)):

Now it would be futile to employ a definition in order to make it clearer what is to be understood by 'true'. If, for example, we wished to say 'an idea is true if it agrees with reality' nothing would have been achieved, since in order to apply this definition we should have to decide whether some idea or other did agree with reality. Thus we should have to presuppose the very thing that is being defined. The same would hold of any definition of the form 'A is true if and only if it has such-and-such properties or stands in such-and-such relation to such-and-such a thing'. In each case in hand it would always come back to the question whether it is true that *A* has such-and-such properties, or stands in such-and-such relation to such-and-such a thing. Truth is obviously something so primitive and simple that it is not possible to reduce it to anything still simpler.

Could we not maintain that there is truth when there is correspondence in a certain respect? But which respect? For in that case what ought we to do so as to decide whether something is true? We should have to inquire whether it is *true*

⁶³ Or, in general, if it is said that a bearer of a truth value *A* is true because there is a *truth-maker B* that makes it true, it can always be asked whether it is true that such a relation of truth-making holds between *A* and *B*.

that an idea and a reality, say, correspond in the specified respect. And then we should be confronted by a question of the same kind, and the game could begin again. So the attempted explanation of truth as correspondence breaks down. And any other attempt to define truth also breaks down. For in a definition certain characteristics would have to be specified. And in application to any particular case the question would always arise whether it were *true* that the characteristics were present. So we should be going round in a circle. So it seems likely that the content of the word 'true' is *sui generis* and undefinable. [-] Truth does not consist in correspondence of the Sinn with something else, for otherwise the question of truth would get reiterated to infinity.

The conclusion is that truth cannot be defined. This does not mean that it is incorrect to say, for instance: The *Gedanke* that the Dalai Lama is wise is true if the world is such-and-such. Rather, the conclusion is that such a statement is utterly trivial and unsubstantial: "A fact is a *Gedanke* that is true" (KS 359 / CP 368).⁶⁴ What Frege objects is the contention that the "reality", as it were, *makes* something true, that a statement (or *Gedanke* or whatever) is true *because* the world is such-and-such.

To return to my main line of thought, another difficulty in the approach to propositions I am presently discussing is the following – or, in fact, the following consideration shows that this approach is, after all, bound to be committed to stability, i.e. to the view that all truths (and, of course, all falsehoods) are world-independent (and necessary). Suppose a proposition p has α -falseness and w -falseness, where α is as usual the actual world and w is a definite world different from α , and has x -truth for the remaining worlds x . Consider the following question:

⁶⁴ See also e.g.

KS 264n / CP 275n (1903)

NS 140, 142 / PW 129, 131 (1897)

BW 120 / PC 184n18 (1910).

(224) Could p have had α -truth?⁶⁵

This appears to me as a sensible question on the assumption that propositions are entities that have or may have truth-properties. But what should we make of this question? If we answer affirmatively, that p could have had α -truth, the possible worlds analysis of (224) requires that we must postulate, in addition to *our* set or *universe* of possible worlds,⁶⁶ as we may call it, *other* sets or universes of possible worlds that are in some ways parallel to our universe. That p could have had α -truth is then analysed as p being true in the actual world of some such "other universe".

All this is of course absurd – there are no such "other universes of possible worlds", besides "ours" – there are no more possible worlds than there are. In particular, it would certainly be bizarre to maintain that there are "other actual worlds". Thus, we must say that there is only "our" universe of possible worlds. This means that (224) must be answered negatively, that is, p could *not* have had α -truth if it does have α -falsehood. Thus, whatever truth-property p has, e.g. that of α -falsehood, it is bound to have it, i.e. p is stable with respect to its truth-properties. This is, of course, the Fregean point, as put in terms of truth values as properties: Where according to the approach presently under discussion it is said that p has α -truth, I say according to my Fregean approach that p^α is the True (and that it is the True extra-worldly).

The approach I have been considering has an interesting connection to Aristotle. In *Categories* 5, 4a10f., Aristotle holds that only *substances* can change while staying numerically the same. However, "it might be maintained that a statement [*logos*] or opinion [neither of which is a substance] is an

⁶⁵ That is, Is it possible that p should have had α -truth? (If these appear as stupid questions the fault is not mine. I think I cannot be held responsible if the approach presently considered gives rise to these questions.)

⁶⁶ I.e. the set consisting in α and w and the x -worlds.

exception to this rule", for "the same [temporally indefinite] statement [such as "Socrates is sitting" --] can be both true and false [at different times]" (4a22-4). But "it is by themselves changing that substances admit contrary qualities" (4a29-30), while "statements and opinions themselves remain unaltered in all respects: it is by the alteration in the facts of the case that the contrary quality comes to be theirs" – "[a] statement [--] remains unaltered, but it is at one time true, at another false, according to circumstances" (4a33-b2). That is, although a *logos* may change its truth value over time (according to Aristotle), it, not being a substance, is not what undergoes change. What is really changing is the external world in which the *logos* is uttered, that is, I take it, the *state of affairs* in modern language. (Aristotle appears to be alluding to the correspondence theory of truth here: A statement is true (so to speak) if the state of affairs corresponding to it obtains, i.e. if it corresponds to a *fact*.)

Without going into Aristotle's theory of substance here, perhaps we may interpret this, from the point of view of our present discussion, as follows: Truth (or falsehood) is not a property of propositions (or of statements or whatever) after all, but when we say that something is true we are expressing a relation of this something to a state of affairs, viz. we are saying that this something is true (so to speak) because it corresponds to an *obtaining* state of affairs (i.e. to a fact).⁶⁷ However, as Frege points out, this move is useless (as we in effect just saw). For it seems that truth is here explicated by means of states of affairs; but for an arbitrary state of affairs it certainly makes sense to

⁶⁷ Indeed, many contemporary possible worlds semanticists are inclined to states of affairs; see e.g. Kripke 1972 (p. 40): "It's only a *statement* or a *state of affairs* that can be either necessary or contingent". According to Alvin Plantinga (1974), in turn, a possible world is a *maximal* or *complete* state of affairs, by which he means the following (p. 45): A state of affairs *w* is a possible world if for every state of affairs *S*, whenever *w* obtains, *S* either obtains or does not obtain (but not both). Plantinga then goes on to state that a proposition is true whenever it corresponds to a state of affairs that obtains in that world (pp. 45-6). (Further, in *ibid.*, pp. 46, 55, as well as in his 1976 paper "Actualism and Possible Worlds" (pp. 258, 261 and 263), Plantinga explicitly states that he regards truth value as a property of a proposition.)

ask whether *it is true* that it obtains, say, in the actual world, from which we see that truth is really something more basic than facts (i.e. obtaining states of affairs), and thus cannot really be explicated by means of them.

Furthermore, if one despite all this wishes to appeal to states of affairs, one gets entangled with the familiar complications, for since it is said that a state of affairs may obtain in one world, say, α , and fail to obtain in another, say, w , and *obtaining* surely seems like a property a state of affairs may have or fail to have, the following questions arise once again, for a given state of affairs s :

Does s consist in alethic slices, i.e. is it the case that α - s obtains and w - s fails to obtain? (If it is said that s does consist in slices, the instability claim really cannot be made: Different slices in different worlds.)

Or does s have world-indexed properties, i.e. does s α -obtain while not w -obtaining? (This option in turn inherits all the problems of world-indexed truth-properties of propositions.)

These are the same questions that arised before states of affairs entered into the picture. Nothing is achieved by means of states of affairs (or what is achieved is a vindication of Frege's claim that the correspondence theory of truth fails to say anything substantial). We are really running in circles here because the instability claim is, in terms of states of affairs, that a state of affairs may obtain in one world and not obtain in another – thus all the problems I pointed out in the claim of instability of propositions, with respect to truth value, or in fact all considerations relating to propositions and their truth values, can be repeated in terms of states of affairs and obtaining.

Perhaps it is objected that these difficulties of the instability view are due to illegitimate *reification* of propositions, or of bearers of truth values in general. Perhaps the ontological category of propositions as abstract entities is denied altogether. Instead of saying that propositions are true or false (or neither), it

is claimed, we should say that (declarative) *sentences* or *statements* are true or false (or neither). Nominalists, or at least those who disapprove metaphysical realism (i.e. realism with respect to abstract objects), tend to favour this sort of view.

However, I think this move of denying propositions does not help. In fact, already the Stoics seem to have formulated against it the following – in my opinion decisive – argument:⁶⁸ One cannot deny that there is something "behind" sentences as mere patterns or forms (or, since the Stoics preferred the spoken word, mere sounds), for a mere sentence, viewed *as* a string of letters, is not properly *significant* – if it were, both a competent speaker, *S*, of a language, and a nonspeaker, *N*, who is nevertheless able to recognize the string, should exactly in the same way *make sense* of a meaningful sentence of this language. However, only *S* makes appropriate sense of this sentence, or grasps an appropriate thought when reading or hearing it, i.e. understands it properly. The difference between *S* and *N* cannot lie in a recognition of the sentence as a mere string, for with respect to that they are equal; the difference lies in the ability of recognizing it as significant, in the ability of recognizing the content expressed, which is really the primary characteristic of language. In short, physical patterns or forms are as such irrelevant – it is the thought that counts.

Further, let us for the sake of an argument forget propositions and say that a statement has or may have a truth value. The instability claim is then that the same statement may be true in one possible world and false in another. According to the first version of this claim, distinguished above, one and the same statement may have the True as the referent in one world and the False

⁶⁸ I rely here on Gabriel Nuchelmans (1973, 76), who ascribes the presentation of this argument to Sextus Empiricus' (fl. c. 190 AD) *Adversus Dogmaticos* II (i.e. *Adversus Mathematicos* VIII).

as the referent in another.⁶⁹ But then, there is no justification in regarding these as the same statement, because if we do so, we obviously must say also that

Bobby Brown is bald

is, whenever used, the same statement, no matter who is referred to by 'Bobby Brown'. This will not do because this contravenes the obvious demand that no statement is true and false at the same time – for some Bobby Browns are bald and some are not.

The second version of instability, when combined with the view that statements are bearers of truth values, may be expressed thus: A statement may have a property of being true in one world and a property of being false in another. The first subcase of this is the claim that statement slices are truth bearers. Again, this do not concern us because if it is said, e.g., that the α - S is true and the w - S is false, where ' S ' indicates a particular statement, it is not said of the *same* object (i.e. statement) that it has contrary properties. According to the second subcase, in turn, one and the same statement may be both α -true and w -false. Again, this do not in the least affect the claim that bearers of truth values are immutable, for here no contradictory properties are assigned to one and the same statement. (Recall that the opposite of α -truth is α -falsehood, not w -falsehood.)

Other objections, presented above, against the proposition version apply to this statement version as well. First, it is circular: We can always ask whether the statement that a given statement has the property of being true has the property of being true. Secondly, we can always ask, paralleling (224), whether a given α -false statement could have had α -truth; which subsequently leads to the insight that statements are stable after all.

⁶⁹ Of course, we are relating to *our* language; when I say that a statement is true in some world other than the actual one, it means that it is true according to our actual usage of words, irrespective of how words, or word-forms, are used in any other world.

2.12 Changelessness

Let us look into the topic of *temporal change* by means of the following principle, which appears as plainly true for empirical, concrete objects:

- (CH) Something that is true of an object at some moment of time may later or earlier be false of this same object; or equivalently, an object that has a certain property (falls under a certain Begriff) at some moment of time may fail to have this property (fail to fall under this Begriff) at some other moment of time.

For example, it appears as a perfectly natural thing to say that it may be true of a certain person today that he is bald although it was yesterday false of him – of this very same person – that he was bald, or, in other words, a person may have the property *being bald* today even though he – this very same person – did not have this property yesterday. However, I think (CH) is false (on its most natural interpretation), because it contradicts the principle of *indiscernibility of identicals*, which I think is definitely true, i.e. the principle,

- (IndId) If something true of the object *a* is not true of the object *b*, then *a* is not the same object as *b*, or, equivalently, if *a* has some property *b* does not have,⁷⁰ *a* is not the same as *b*.⁷¹

Frege makes it clear that he advocates this principle, e.g. in the first volume of

⁷⁰ I.e. *a* but not *b* falls under some Begriff.

⁷¹ This principle is often associated with Leibniz; see e.g. P 34, 35, 43 (G.7 219, 221, 228; 1679-86?) P 52-3 (C 362; 1686) P 122, 131 (G.7 225, 236; after 1690).

the *Grundgesetze* (1893), where he states (GG.1 §§ 20, 50):⁷²

If Γ is the same as Δ , then Γ falls under every Begriff under which Δ falls; or as we may also say: then every Satz that holds for Δ holds also for Γ .

If a Satz holds for a that does not hold for b , then a does not coincide with b .

I think we must accept, with Frege, this principle of indiscernibility of identicals, for it really says nothing more than the triviality that if something is true of an object it is true of this same object, or if an object has a certain property then it has this property, i.e. all objects are what they are (have exactly those properties they have). However, in accepting this principle it seems that we must recognize that no object can be, say, first not bald and then bald. If temporal objectual change means that properties are lost or gained, then objects do not change (temporally). In terms of necessity, it appears on the basis of (IndId) that an object has all its properties necessarily, otherwise it would not be the object it is: If the object a is actually an F , it is not possible for it to be a *non-F* (in any possible world), for no object that is a *non-F* in some world can be, by (IndId), the object a .

In the standard version of possible worlds semantics, presented above, a given object is said to be a function from possible worlds to "slices". The dilemma between (CH) and (IndId) is in fact resolved by denying that literally same objects are to be found in distinct possible worlds (or, temporally speaking, at different times): The actual slice of, say, Ent is not the same as its "transworld slice" (or, temporally speaking, the present slice of Ent does not coincide with its "transtemporal slices"). Still, it is alleged, the talk of the sameness of an object through possible worlds makes sense: The slice a -of- α is the "same" as the slice b -of- w whenever they result from an application of a single world-line

⁷² See also

GG.2 §104 (1903)

NS 131 / PW 120 (c. 1893)

BW 126 / PC 78 (c. 1914).

– that is, whenever there is a world-line $f(\xi)$ such that $a = f(\alpha)$ and $b = f(w)$. Thus, "transworld sameness" between slices is not regarded as real (numerical) identity but as containment in the set of results of applications of one and the same "function-object", construed as a world-line, i.e. as a Begriff from worlds to slices. (Cf. section 2.4. above.)

This resolution of objectual change is known in the literature as the *perdurantist approach*. Many popular philosophers of the present century, for instance, Willard Van Quine, Nelson Goodman (1966/1951, XI.2-4) and J.J.C. Smart, have adopted this approach – not necessarily in connection with alethic matters but directly in connection with the dilemma of temporal change.⁷³ Thus, Quine (1950) writes (pp. 65f.):⁷⁴

You *can* bathe in the same *river* twice, but not in the same river stage. [--] A river is a process through time, and the river stages are its momentary parts. Identification of the river bathed in again is just what determines our subject matter to be a river process as opposed to a river stage. [--] We may say that [distinct river stages] stand in the relation of river kinship [--]. Now the introduction of rivers as single entities, namely, processes or time-consuming objects, consists substantially in reading identity in place of river kinship. It would be wrong, indeed, to say that [two distinct stages] are identical; they are merely river-kindred. [-- A river is] a process with considerable temporal spread, and hence a summation of momentary parts [--. Often] 'This river' means 'the riverish summation of momentary objects which contains this momentary object'. [-- Naming a river may be construed as] naming a single concrete object extended in space and time [--].

Smart (1963, 132f.), in turn, writes as follows (pp. 133, 135):

The instantaneous state of [--] a four-dimensional space-time solid will be a three-dimensional 'time slice' of the four-dimensional solid. Then instead of talking of things or processes changing or not changing we can now talk of one time slice of a four-dimensional entity *being* different or not different from some other time slice. (Note the tenseless participle of the verb 'to be' in the last sentence [indicated by italicising].) [--] When we talk in our four-dimensional language of

⁷³ See Chisholm 1976, App. A, for a brief historical sketch of this approach.

⁷⁴ See also Quine's *Methods of Logic*, pp. 210-1, and *Word and Object* §36.

space-time we must clearly talk neither of events nor of things changing, since we have replaced the notion of a thing as the permanent in change by that of a four-dimensional entity, some of whose time slices *are* or *are not* different from others.

I have several objections to this sort of approach. First, objects are objects and not functions. In particular, it is extremely odd to speak of a slice of a *number*: Surely, e.g. the number nine is literally the same definite worldless and timeless object "everywhere" and not a function of possible worlds, resulting in "slices of the number nine" on application.⁷⁵

Secondly, the ontology of slices or stages calls for an explanation: What are those "metaphysical slices", e.g. "slices" or "appearances" of, say, Ent, supposed to be in various possible worlds? I find the talk of slices untoward even in the context where it may seem to be most plausible, viz. in connection with temporal modality. Objects are not agglomerates of time-slices. I think I, for instance, am *literally* the same object today as I was yesterday; there are no separate yesterday-at-*t*-slice of me and today-at-*s*-slice of me.

Thirdly, if time is, as it seems, continuous, or at least dense, there appears to be what might be called *the problem of the infinite number of extended bodies*: All time-slices of me, or of any extended object, are extended (if they are not, I do not see how I (or my body) can be extended at all); but under the assumption of denseness the number of instants of time between any two instants is infinite; if so, there is an infinite number of extended objects in the world in any period of time, no matter how infinitesimally short.

Fourthly, concerning again numbers, let us consider the statement,

The number nine is (actually) John's favourite number this month.

⁷⁵ This objection concerns primarily only possible worlds semantics with slices, not the views of e.g. Quine and Smart related to spatiotemporality.

On the assumption that this is true, we certainly may say that it is true of the number nine that it is John's favourite number this month. Next month, however, nine will not be John's favourite number – it will then be false of nine then that it is among John's favourites. Now, I think the advocates of the perdurance solution must say, if they are to be consistent, that we are here talking about (at least) two different stages or slices of the number nine: the this-month-slice and the next-month-slice. However, it appears as completely implausible that numbers, being abstract objects, should have some temporal characteristics, e.g. temporal stages or slices.

This objection may be countered by saying that the number nine does not of course change "in its essence" at all, even though it may enter into "opposite contingent relations" at different times.⁷⁶ However, this is beside the point. What we have against each other here are (CH) and (IndId), and if the perdurantists wish to resolve *this* dilemma in connection with our number nine case, I do not see how they could plausibly give some solution other than the one they usually give. After all, something appears here to be first true of something, *a*, and then false of it, and perdurantists usually explain this by saying that it is not really literally the same *a* of which something is first true and then false but something is first true of a certain temporal part of *a* and then false of another temporal part of *a*. In the present case *a* is the number nine and perdurantists indeed seem committed to the very implausible view that numbers have temporal parts (or slices or stages or whatever these are called).

Perdurantists may think they have also another, related rejoinder: An explanation of the case we have been considering by appealing to *John's* temporal parts. That is, it may be claimed that the one and only stageless number nine is first the favourite number of the this-month-John-stage and then is not the favourite number of the next-month-John-stage. I think this is again

⁷⁶ Nine, it is said, undergoes only a *Cambridge change*, not a *real change*.

beside the point, for let me ask: Is it or is it not first true and then false of the number nine that it is John's favourite number? The answer must be that this is the case, and the standard perdurantist explanation in cases such as this appeal to temporal slices of the thing of which something is first true and then false.

As I said above, this resolution in terms of slices in fact does not concern the principle (CH), or its alethic counterpart, when these are read strictly: It is not after all the same object, viz., the same slice, that first has a certain property and then fails to have it. On the other hand, we have here an explanation for the notion of temporal (and, *mutatis mutandis*, alethic) change in the form of the following modification of (CH):

(CH2) For the given temporal function-object $f(\xi)$, and for the given moments of time t and u , something true of the slice-object $f(t)$ may be false of the slice-object $f(u)$, i.e. the slice $f(t)$ may have some properties the slice $f(u)$ lacks.⁷⁷

As I already indicated, I do not accept this talk about slices, and I also hold that the very same – *literally* or *numerically* the same – object may be present yesterday at t and today at s (and at all moments in between), and, alethically speaking, the same object remains as the very same through worlds. Thus, since I of course accept (IndId), I am bound to deny (CH). However, it is certainly true, in some sense or other, that normal physical objects change in time – any theory that denies this altogether, or does not have any explication of what might be meant by the normal notion of objectual change, is certainly implausible.

Let us restate the problem as follows: Assuming that *being sitting* is true of

⁷⁷ Note, however, that the acceptance of (CH2) at the expense of the denial of (CH) amounts to the rejection of change as it is naturally construed (as already indicated above): Change according to (CH2) is *not* change of properties of *numerically the same* object.

Socrates at some moment of time t , it cannot be, by (IndId), the case that also *not being sitting* is true of Socrates, the very same object. That is, if something is true of an object, the opposite of this something just cannot be true of this same object. Perhaps it is now said that something may be true of an object at one time and the opposite of this something at some other time – but if it is meant by this that something true of the slice the-object-at- t is false of the slice this-"same"-object-at- s , this only brings us back to the perdurantism which we have already considered and refuted above: It is really not the same object we are considering at these different times t and s .

I think the only way out of the difficulty connected with (CH) and (IndId) is what is known as *endurantism*.⁷⁸ Recall that we are trying to leave room for an explication of (apparent) change under the consequence of (IndId) that objects are immutable. The endurantist explication of this goes along the lines familiar by now from the earlier sections of the present chapter: Every property (as well as every truth) of a given (empirical) object is to be regarded as indexed to a world (and to a moment of time). For example, the one and only Ent may have the property *being covered with green leaves in α* as well as the property *not being covered with green leaves in w* , where ' w ' names a world different from α .⁷⁹ The object having these properties, which of course are by no means contradictory, is the same – strictly or numerically the same. Such world-indexed properties (and truths) are necessary, or essential, for if Ent has the property *being covered with green leaves in α* it is of course true in every world that it has this property – or more properly, it is worldlessly true of Ent that it is covered with green leaves in α . In general, an object that has the property $B^\alpha(\xi)$ may fail to have the property $B^w(\xi)$, for some world w distinct from α ; and when we raise the question whether an object having $B^\alpha(\xi)$ has this

⁷⁸ The endurantist view I shall put forward here is based on the work of Alvin Plantinga in the seventies. See Plantinga 1970 (487-92), 1973 (150-1, 155-6), 1974 (62-5, 72, etc.), 1976 (esp. 263-5), 1978 (132-8); see also Plantinga 1987. See also e.g. D.H. Mellor 1981 (esp. 111).

⁷⁹ Here, I have again left the time-indication aside.

same property in some world u distinct from α , the answer is of course "yes", the reference to u being pointless.

When I truly say that I am today at noon the same person as I was yesterday at noon, I am talking about *myself* taken, so to speak, *in full* – I am not talking about separate slices of me, because these are distinct, or more properly, because there just aren't any slices. That is, I am today at noon numerically the same object as I was yesterday at noon (to put it a bit misleadingly) – but this numerically the same me has "today-at-noon-properties" as well as "yesterday-at-noon-properties": I may e.g. have the following noncontradictory properties: *being tired today at noon, being nontired yesterday at noon*.

Objects, then, do not change at all? On the approach I have been explaining we really must say that objects do not gain or lose properties – i.e. do not change – when we by the word "property" mean *indexed* properties. Still, there is room left for an explication of change: Let us consider the Begriffe $\xi > \zeta$, $\xi > 7$ and $\xi > 12$. We may quite naturally say that 9 is $(\xi > \zeta)$ -related to 7 but not to 12, or that 9 has $\xi > \zeta$ at₁ 7 and also has $\sim(\xi > \zeta)$ at₂ 12, where by 'at₂' it is indicated that the second argument-place is meant (cf.: 7 has $\xi > \zeta$ at₁ 9). Here, we are dealing with, besides the Begriffe $\xi > 7$ and $\xi > 12$ (which of course are distinct), with what might be called the *overall Begriff* (relative to this example) $\xi > \zeta$ – and we are dealing with this overall Begriff as well as its *complement Begriff* $\sim(\xi > \zeta)$. Similarly, we can say e.g. that this tree and that tree *share* the property ξ *is covered with green leaves at* ζ at₂ the actual moment of time but do not share this property at₂ some future moment of time, t . This mode of speech is fully appropriate on the present approach even though it inevitably means that we may naturally say: At least one of these trees must have changed. The crux of the matter is that we are here dealing with both the overall Begriff ξ *is covered with green leaves at* ζ , or $C^{\zeta}(\xi)$, and its complement $\sim C^{\zeta}(\xi)$ – this creates what perhaps might be called an illusion of change, for what we really have in our two trees example is that although both trees are $C^{\nu}(\xi)$ (i.e. both are now covered with green leaves), one of them is $C^{\nu}(\xi)$ and the other $\sim C^{\nu}(\xi)$ (i.e. only one of them is covered with green leaves

at t) – strictly speaking, neither tree changes, for they have, with respect to $C^{\zeta}(\xi)$, different (time-indexed) properties: as I have repeatedly pointed out, to be both $C^{\nu}(\xi)$ and $\sim C^{\nu}(\xi)$ is not to have contradictory properties (although the overall Begriffe $C^{\zeta}(\xi)$ and $\sim C^{\zeta}(\xi)$ are of course contradictory).

The difference between perdurantism and endurantism may be put succinctly as follows: Whereas in perdurantism objects are held "responsible" for change (or apparent change) – objects are indexed to times and worlds – in endurantism objects remain as whole and properties are held as responsible for "change" – properties are indexed. For example, let us consider the statements,

(225) Frege was bearded in 1900,

and,

(226) Frege was bearded in 1990.

Roughly, perdurantists say that these should be analyzed as "*1900-Frege: bearded*" and "*1990-Frege: bearded*",⁸⁰ respectively, while endurantists – or at least some endurantists, including myself – analyse (225) and (226) rather as "*Frege: 1900-bearded*" and "*Frege: 1990-bearded*".

This brings us to a further argument against perdurantism. I think it is utterly natural to say that (226) is about Frege: It asserts that Frege was bearded in 1990, which is false because he was not around in 1990 (he is 1990-dead). This is the view of endurantism (of the sort I am advocating). Perdurantism, in contrast, seems to be committed to the view that nothing is referred to by the subject-term of (226), for there is no such object (i.e. slice or stage) as 1990-Frege. Thus, according to perdurantism (226) is about nobody or nothing at all,

⁸⁰ I use these forms with the colon in order to avoid needless complications with tenses in the statements in question.

which in my opinion is very implausible.⁸¹ (Even more revealing is the comparison between "Frege was dead in 1900" and "Frege was dead in 1990".)

Frege often tells us that empirical objects (unlike abstract ones such as numbers) *do* change in time. For example, in KS 274-5 / CP 286-7 (1904) we find:⁸²

If anything varies, we have in succession different properties, states, in the same object. If it were not the same one, we should have no subject of which we could predicate variation. A rod grows longer through being heated; while this is going on, it remains the same one.

These passages must be explained away since they seem to contravene my claim that it follows from Frege's theory of Gedanken and truth that objects do not really change. My explanation is, simply, that Frege is here talking about change as common-sensically construed, which I have ventured to explicate above. In any case, as I have pointed out more than once, we cannot strictly speaking say that numerically the same rod changes its properties, not at least without contradicting the indiscernibility principle (IndId); and Frege explicitly advocates this principle.

On the other hand, the following passage, appearing in KS 326 / CP 343 (1906), might be seen as a back up for my claim that a proper Fregean theory of change subscribes to changelessness:

All of us probably agree that time designations belong to a predicate, and that an object may have a property at one time which it does not have at another.

⁸¹ There appears to be an alternative way of construing the slice-view, according to which when we say that Frege was bearded in 1990 we mean to refer to the *total time-slice* of Frege, that is, the *spatiotemporal worm* Frege which is (or was) a total continuous object from 1848 to 1925. (See e.g. Loux 1998, 204-16.) Then it may be said that the statement that Frege was bearded in 1990 is false because this "worm" is not bearded in 1990. This brings the slice view quite near to the endurantist position I am propounding.

⁸² See also e.g. GL §46 (1884), NS 173-4 / PW 159-60 (c. 1900).

This seems to take a position to the question discussed in the nineteenth century, whether indications of time should be attached to the copula or the predicate. For example, in his *Elements of Logic* (1826) R. Whately writes (II.i.2; quoted in Prior 1957, 105):

The Copula, as such, has no relation to *time*, but expresses merely the agreement or disagreement of two given terms: hence, if any other *tense* of the substantive-verb besides the present, is used, [--] if the circumstance of *time* do really *modify the sense* of the whole proposition, [--] then this circumstance is to be regarded as part of one of the terms: [--] as 'this man *was* honest'; i.e. 'he is one formerly-honest'.

Perhaps Frege is in the last passage I quoted from him joining with Whately (and others, cf. Prior 1957) and thus saying, roughly, that the one and the same unchanging object may have both the indexed properties $F(\xi)\text{-at-}t$ and $\sim F(\xi)\text{-at-}s$, which is precisely what I have put forward above.

2.13 Contingency

I have tried to show above that according to Frege, suitably extrapolated, all truths are necessary (or rather, worldless), i.e. all true Gedanken are necessarily (rather, worldlessly) true, and also, subsequently, every object has its properties necessarily or essentially (rather, worldlessly). This is what we should expect Frege to hold, because he explicitly states that truths (true Gedanken) are absolute, timeless, eternal, immutable, objective and independent of thinkers and the world. In short, on Frege's view Gedanken belong to an abstract "third realm" of entities – accordingly, a Gedanke is true or false timelessly (omnitemporally) and, by a natural extension, worldlessly (necessarily).

I shall now give an answer to the obvious objection to this Fregean approach – even though this answer should be evident on the basis of what I have said above – namely, to the objection that it is certainly not necessarily the case

that, for instance, Ent is covered with green leaves at noon on June 1, 1999, or that I am here now – surely, it is said, these are contingent matters, matters that, unlike the fact that $9 > 7$, could easily be otherwise. Further, the claim that it is necessarily true (assuming that it *is* true) that Ent is covered with green leaves at noon on June 1, 1999, seems to amount to the claim that at that time Ent essentially or necessarily has its (actual) property of being covered with green leaves; or, to view this matter purely temporally, it is to hold that objects do not change at all in the course of their existence.

Let us thus consider the natural – and true! – claim: It is only contingently true that Ent is covered with green leaves (at a given moment of time). I first reexplain the notion of an incomplete *Gedanke*: Abstracting from the *Satz*

Ent is covered with green leaves in the actual world,

which expresses a *Gedanke*, we may say that the *sentence*,

Ent is covered with green leaves,

or, more fully,

(227) Ent is covered with green leaves in a world ξ ,

expresses an incomplete *Gedanke*.⁸³ The *Bedeutung* of this sentence is the *Begriff* *being a world in which Ent is covered with green leaves*, which, as it happens, is the intension of the sentence in question. It is this incomplete *Gedanke* expressed in (227) (or, if you like, the sentence (227) itself), of which it may be said that it is true in some worlds, e.g. in the actual world, and false in others (just like " $9 > \xi$ " is true at 7 and false at 12). That is,

⁸³ I again leave the indication of time as implicit.

(228) It is not necessary that Ent is covered with green leaves,

is true because for some world x , Ent is not covered with green leaves in x , i.e. Ent does not have the property *being covered with green leaves in x* , i.e. $\sim C^x(e)$ is the case. Or to be absolutely precise, (228) is true because it says,

$$\sim \forall x C^x(e),$$

or equivalently,

$$\exists x \sim C^x(e),$$

which is true (we may quite plausibly assume).

However, it is, if a truth at all, a necessary truth that Ent is covered with green leaves in α , i.e. Ent has the essential property *being covered with green leaves in α* , or $C^\alpha(\xi)$; there is no contradiction between this and (228).

Now we see what the "it could have been otherwise" talk means. Let us ask, just *what* could have been otherwise? Not of course a completely articulated Satz (or, more precisely, the Gedanke it expresses) because this names a truth value, and a truth value just is not a sort of object that could have been otherwise. The entity that could so to speak have been otherwise is of course something that is in need of completion, viz. a completion by a world. That is, for instance, what is named by "The object a is an F in α " could not have been otherwise, but often items designated by sentences of the form "The object a is an F in ξ " *could* have been otherwise (so to speak): This is not in general a constant function (from worlds to truth values), and whenever it is not constant, it returns the True for some worlds and the False for others. "Necessarily, S " may really be compared to "Universally, F " as a way of putting " $\forall x F(x)$ ", i.e. "All objects are F s": Just as it is really the Begriff $F(\xi)$ that is universal, it is the Begriff S^ξ – which in fact is an intension of a sentence – that is necessary. (In other words, necessity is a second-level Begriff of

intensions, which in turn are first-level Begriffe.)

Analogously, the *Satz* "I am (actually) here now", is necessarily (i.e., rather, worldlessly) true whenever I utter it (and whenever anybody meaningfully utters this form of words), but still it is only contingently true that I am here now, the reason for the latter fact being that there are worlds in which I am not here now, that is, there are worlds not falling under *I am here now in* ξ , or, in short, the following is the case:

$$\forall xH^{av}(i) \ \& \ \sim \forall xH^{xv}(i),$$

This of course reduces to:

$$H^{av}(i) \ \& \ \sim \forall xH^{xv}(i).^{84}$$

It should be clear, then, that I do not propound necessitarianism, i.e. the view that, on my notation,

$$p^{\alpha} \rightarrow \forall xp^x$$

holds for any p . My point has rather been that all truths may plausibly taken as being *worldlessly* true, the conclusion of which is that all truths are true of necessity, or, it might be said, true of "pseudo-necessity" or "bogus necessity":

$$p^{\alpha} \rightarrow \forall xp^{\alpha}.$$

Analogously, the sempiternity or alwaysness of a truth is only pseudo-

⁸⁴ I.e. in natural language: I am actually but not necessarily here now. (To repeat what I have been trying to drive home above, my *actually* being here is nevertheless necessarily true, or, more precisely, worldlessly true.

sempiternity or bogus sempiternity.⁸⁵

I hope I have thus managed to explain Frege's view that all truths are (bogus) necessary – and that all objects have their "actual-properties" (bogus) necessarily – in a manner which shows that this view is not at all implausible. After all, it does not follow from my Fregean account that we cannot say, for example, that Ent is covered with green leaves only contingently, or that Ent has its property of being covered with green leaves only unessentially. Although $C^{\alpha}(e)$ is, if true, true in every world (or more precisely, true worldlessly) – or, in other words, Ent has $C^{\alpha}(\xi)$ essentially (worldlessly) – $C^{\xi}(e)$ is false in many worlds, i.e. there are many worlds that are not $C^{\xi}(e)$.

2.14 Determinism and free will

Above, I have advocated the theory that all truths (and falsehoods) are timeless and worldless. According to this view, if we say that some truths, e.g. mathematical ones, are necessary, then we must say that *all* truths, even empirical ones, have this distinction.⁸⁶ As we have seen, this approach still admits the notion of contingency: The items that may be contingent are not truths, i.e. true Gedanken, but *incomplete* Gedanken, in the sense that " $S(\xi)$ " expresses a contingent incomplete Gedanke just in case the Bedeutung of " $S(\xi)$ ", being a function from possible worlds to truth values, is multivalued, that is to say, returns the True for some arguments and the False for others. (The "definitions" of necessity and possibility are analogous.)

⁸⁵ From now on, in order to avoid confusion I shall try to call only "genuine" necessity "necessity", and "bogus" necessity "worldlessness" – and, analogously, genuine alwaysness "sempiternity" and timelessness "timelessness".

⁸⁶ However, as I just indicated in the previous section, we are here really dealing with bogus necessity.

In spite of this explanation of contingency, it may be asked whether my approach is committed to *determinism*. As to the question, what exactly determinism means, the equation of necessitarianism, on one hand, and my approach involving worldlessness, on the other, with determinism may seem natural, since determinism is often characterized as the thesis that there is only one *possible* future, i.e. that the way the future will be will be such of *necessity*. However, this characterization is in my opinion somewhat inaccurate and thus misleading. I define a *deterministic system* as a system such that its every state⁸⁷ is a *function* of the previous state and everything that regulates the succession of states.⁸⁸ Treating the world as a system we have, as an application of this definition: The world is deterministic, if given the state of the world, *s* (at a certain moment of time) and whatever principle, *p*, that governs the sequence of world-states (e.g. laws of nature), the next state immediately following *s* is a function of *s* and *p*, i.e. there is but a one option as to what the next state (as well as all future states) will be, i.e. the state and the governing principles uniquely guarantee or determine the future states. Necessitarianism, i.e. the view that there is only one possible world does not follow from this. A Leibnizian expression of this fact is particularly illustrious: Although God decided to create this world of ours – which is deterministic, according to Leibniz⁸⁹ – he could have chosen to give existence to some other world instead, a world with substances, events and even governing principles (such as laws of nature) different from those of the actual world. I shall return to this issue of determinism vs. necessity shortly.

Determinism is sometimes, e.g. in Cornman *et al.* 1992 (pp. 91f.), defined as

⁸⁷ Excluding the first state, if there is any.

⁸⁸ Accordingly, an indeterministic system is one in which the progression of states (according to governing principles) may be nonfunctional, i.e. there are states with multiple immediate successors.

⁸⁹ It is not just an accident that the actual world is deterministic: All possible worlds have this distinction, according to Leibniz.

"the thesis of universal causation, the thesis that everything is caused". I think this is not a good definition, for, first, the well-known Aristotelian problem of future contingents (to be considered in the next chapter) assumes nothing at all about causes – whether everything or anything is caused – and nevertheless it is commonly held to have to do with determinism. Secondly, a system may be indeterministic even if there is nothing uncaused. In their paper "Causal Irregularity" F.I. Dretske and A. Snyder describe a thought experiment that is essentially as follows: A revolver is connected to a genuine randomizing device – when the trigger is pulled the revolver indeterministically fires or fails to fire. I point this randomized revolver at a cat and pull the trigger – the revolver fires. Surely I am the cause, or part of the cause, of the cat's death – I am responsible – although the firing was indeterministic. Nothing in this scenario is uncaused, still the system is indeterministic. Thirdly, and more generally, it may be that in an indeterministic system with either of two states, *t* or *u*, as the immediate follower of a certain state, *s*, the cause or reason for *both t's* succeeding *s* and *u's* succeeding *s* may be found in *s* and in the governing principles of that system – if so, this system is indeterministic and still everything is caused in it. Admittedly, it is true that no *reason* can be found in this system *why*, say, *t* rather than *u* immediately follows *s* in a particular "run" of this system; this, however, does not mean that either the occurrence of *t* or that of *u*, in runs they are part of, is uncaused. If this is so, the (almost universal) traditional repugnance towards causelessness is more accurately characterized as repugnance towards reasonlessness.

There are many kinds of determinism, or, perhaps more properly expressed, several ways of arguing for it. First, we have *physical* or *scientific* or *causal determinism*, the proponents of which hold, roughly, that the world is entirely governed by physical causal laws so that when these laws are applied to the state of the world at any moment of time the next state uniquely ensues. According to *theological determinism*, in turn, God, being omnipotent and omniscient, determines everything that happens by the *divine providence*, for he has a detailed plan of the history of the world in its entirety (on the basis of which he foreknows all future events). Causal determinism quite naturally

subsumes under theological determinism: "And as to natural causes, we by no means separate them from the will of Him who is the author and framer of all nature" – St. Augustine (354-430), *The City of God* 5.9. As a third "form" of determinism, it is commonplace to talk about *logical determinism* in connection with arguments for determinism that are based on the logical principles alone. The *locus classicus* of this sort of argument is of course Aristotle's famous sea-battle argument in *De Interpretatione* 9: According to this argument the conclusion,

(229) Whatever will happen will happen of necessity,

follows basically from the logical principle of bivalence alone.

Today, the most frequently discussed argument for determinism appears to be the one based on causation. I shall not, however, deal with this argument, but concentrate on logical and theological arguments. The basic issues and problems of determinism of course remain as the same, no matter whether we approach it logically, theologically or causally. On the causal (physical) approach, for example, a determinist claims that the world is physically so constituted that the future is as it were contained in the present state, or is in fact contained in every past state, including the initial state of the world. There is no possibility of what is usually termed *branching future*, i.e. there is no point in the future history (or in fact in all of history) of the world where "either this may happen or that may happen" – at any time, only one future is possible.

These formulations, using the word "possible", bring us again to the important distinction between necessitarianism and determinism. Since the present-day analysis of "possible" is "true in some possible world", it may seem that if the contention that, due to all-determining causality, only one course of events is *possible*, must amount to the claim that there is only one possible world. This is *not* so. A determinist holds that our *actual* world (along with other deterministic possible worlds) is such that whatever happens happens

inevitably (rather than "happens necessarily" in the sense of happening in all possible worlds). This is the deterministic claim – a determinist may very well accept the talk about other possible worlds (which may be or not be deterministic). This is also seen from the fact that in causal determinism there is talk about a state determining all future states. It is surely consistent hold this view and still accept that there are possible, unactualized states. This – that the real issue is *infra-world* determination – applies also to logical and theological approaches, or so I will argue.

The main problem of determinism is that it is apparently in contradiction with human *free will* (and human free action). In the theological side, we of course have the perennial problem of harmonizing divine providence (and foreknowledge) with human freedom – for without freedom there cannot be any responsibility of what one does. "Sin is [--] the will to retain and follow after what justice forbids, and from which it is free to abstain" is St. Augustine's definition of sin in *Concerning Two Souls, against the Manichaeans* 11.15. If there is no human free will, the real author of sin is God, who alone is to be blamed. On the other hand, it is not at all uncontroversial that determinism excludes free will. (Thus, it is curious that Aristotle's sea-battle argument is usually presented as an attempted demonstration of what is nowadays often called *fatalism*, i.e. "the thesis that the laws of logic alone suffice to prove that no person ever acts freely" (Cahn 1995, 168).⁹⁰ What is curious about this is that since the conclusion of that argument is really something like (229), one should also show, on the basis of logical principles alone, that (229) implies the non-existence of free will and

⁹⁰ There is also another sort of fatalism, one that is perhaps more traditionally and commonly so called. This is fatalism according to which Oedipus is said to have been fated to kill his father and marry his mother, no matter what he did. Fatalism mentioned in the text – the one based on Aristotle's argument – derives from pure logic, not from the presumed all-regulating Fate. (It should be noticed, however, that when in ancient texts *heimarmene* or *fatum* is considered, very often, e.g. in Cicero's *De Fato* and Alexander of Aphrodisias' *Peri Heimarmenes*, causally justified determinism, not "Oedipus determinism" nor "sea-battle determinism", is chiefly under discussion.)

action.)

To give a quick characterization to be considered more fully below, I shall, following Aristotle and Leibniz, call a human *action free* if it is based on autonomous rational deliberation over genuine alternatives. On the basis of this portrayal, I wish to sweep aside the locked room confusion of Locke's. In *An Essay Concerning Human Understanding* 2.21.10-1,⁹¹ John Locke (1632-1704) invites us to consider a scenario in which "a man [is] carried, whilst fast asleep, into a room where is a person he longs to see and speak with; and [is] there locked fast in, beyond his power to get out: he awakes, and is glad to find himself in so desirable company, which he stays willingly in, i.e. prefers his stay to going away." Locke takes it as obvious that this man is staying the room voluntarily, "and yet, being locked fast in, it is evident he is not at liberty not to stay, he has not freedom to be gone." Locke's conclusion is that "*liberty is not an idea belonging to volition*, or preferring; but to the person having the power of doing, or forbearing to do, according as the mind shall choose or direct." Furthermore, "there is want of *freedom*, though the sitting still, even of a paralytic, whilst he prefers it to a removal, is truly voluntary." Ergo: "*Voluntary then is not opposed to necessary, but to involuntary.*"

In his claim that the man freely stays in the room even though he has no alternative for his staying, Locke confuses the act of deciding to stay with that of staying. On the assumption that the act of deciding is free he mistakenly concludes that the staying is free. However, there is no such consequence, or at least this consequence needs to be argued for separately. Even if the man in Locke's example is (by assumption) free to decide, he is not, it seems clear, free to leave.⁹²

⁹¹ Cf. Leibniz, NE 176f.

⁹² Cf. Duns Scotus, *God and Creatures: The Quodlibetal Questions* 16.50: "Something may well be necessary in itself with a necessity repugnant to freedom and still be accepted freely and even contingently. For instance, if one voluntarily dives off a cliff and, while falling, continues to will this, he falls necessarily with the necessity of natural gravity and yet he

I shall approach this issue of determinism and human freedom historically. In the next chapter I evaluate Aristotle's argument and give a solution to the problem arising from it. In chapter 4 I present the theological problem of determinism, arising from God's presumed providential control (and foreknowledge of the future); I then provide a Leibnizian resolution of this problem.

freely wills that fall." (For Aquinas' similar view, cf. Normore 1982, 366.)

This conception of "freedom under necessity" seems to go back at least to the Stoic philosophers Zeno of Citium (335-263 BC) and Chrysippus (c. 280-207 BC), for they used the following illustration, probably in attempting to alleviate the consequences of their commitment to determinism: "It is as though a dog is tied behind a cart. If he wants to follow, he is both dragged and follows, exercising his autonomy in conjunction with necessity. [--] The same thing happens in the case of men" (according to Hippolytus (c. 170-235 AD), in van Arnim 2.975; English translation in Inwood & Gerson 1988, 134).

3 Logical Determinism

3.1 Aristotle's problem of future contingents

In *De Interpretatione* 9 (18a28-19b4), Aristotle presents the notorious *problem of future contingents* as follows (18a34-b16, 19a1-6):

If every affirmation or negation is true or false it is necessary for everything either to be the case or not to be the case. For if one person says that something will be and another denies this same thing, it is clearly necessary for one of them to be saying what is true – if every affirmation is true or false; for both will not be the case together under such circumstances. For if it is true to say that it is white or is not white, it is necessary for it to be white or not white; and if it is white or not white, then it was true to say or deny this. [-] So it is necessary for the affirmation or the negation to be true. It follows that nothing either [-] will be or will not be [-] as chance has it, but everything of necessity [-] (since either he who says or he who denies is saying what is true). For otherwise it might equally well happen or not happen, since what is as chance has it is no more thus than not thus, nor will it be. Again, if it is white now, it was true to say earlier that it would be white; so that it was always true to say of anything that has happened that it would be so. But if it was always true to say that it was so, or would be so, it could not not be so or not be going to be so. But if something cannot not happen it is impossible for it not to happen; and if it is impossible for something not to happen it is necessary for it to happen. Everything that will be, therefore, happens necessarily. So nothing will come about as chance has it or by chance; for if by chance, not of necessity. [-] Hence, if in the whole of time the state of things was such that one or the other was true, it was necessary for this to happen, and for the state of things always to be such that everything that happens happens of necessity. For what anyone has truly said would be the case cannot not happen; and of what happens it was true to say that it would be the case.

The problem, in an initial formulation, is that if

(P01) it is true to say (now) that (contingent) something, *E*, will be (or will happen), or, otherwise, it is true to say (now) that *E* will not be,

then

(C0) *E* necessarily will be or (otherwise) necessarily will not be.

For

(P02) if it is true to say that *E* will be, *E* cannot but come to be (for otherwise it would not be true to say that it will be); that is, *E* necessarily will be,

and similarly,

(P03) if it is true to say that *E* will not be, *E* necessarily will not be.

However, the conclusion (C0) that follows logically from the premises (P01)-(P03) seems rather intolerable, for there appears to be many future things or events that neither be (or happen) of necessity nor fail to be of necessity. In Aristotle's words (19a8-19),

we see that what will be has an origin both in deliberation and action, and that, in general, in things that are not always actual there is the possibility of being and of not being; here both possibilities are open, both being and not being, and, consequently, both coming to be and not coming to be. Many things are obviously like this. For example, it is possible for this cloak to be cut up, and yet it will not be cut up but wear out first. [--]It is the same with all other events that are spoken of in terms of this kind of possibility. Clearly, therefore, not everything is or happens of necessity: some things happen as chance has it [--].

Aristotle's solution, which now follows, is a traditional object of disagreement, not so much as to whether it is correct but as to *what this solution is*. This solution is given in the continuation of the just quoted passage (19a18-b4):

Clearly, therefore, not everything is or happens of necessity: some things happen as chance has it, and of the affirmation and the negation neither is true rather than other; with other things it is one rather than the other and as a rule, but still it is possible for the other to happen instead.

What is necessarily is, when it is; and what is not, necessarily is not, when

it is not. But not everything that is, necessarily is; and not everything that is not, necessarily is not. For to say that everything that is, is of necessity, when it is, is not the same as saying unconditionally that it is of necessity. Similarly with what is not. And the same account holds for contradictories: Everything necessarily is or is not, and will be or will not be, but one cannot always divide and say that one or the other is necessary. I mean, for example: it is necessary for there to be or not to be a sea-battle tomorrow; but it is not necessary for a sea-battle to take place tomorrow, nor for one not to take place – though it is necessary for one to take place or not to take place. So, since statements are true according to how the actual things are, it is clear that wherever these are such as to allow of contraries as chance has it, the same necessarily holds for the contradictories also. This happens with things that are not always so or are not always not so. With these it is necessary for one or the other of the contradictories to be true or false – not, however, this one or that one, but as chance has it; or for one to be true *rather* than the other, yet not *already* true or false. Clearly, then, it is not necessary that of every affirmation and opposite negation one should be true and the other false. For what holds for things that are not but may possibly be or not be; with these it is as we have said.

At least the following interpretations of Aristotle's solution to his problem of contingent statements concerning the future has been proposed:

- (i) Such statements do not have a truth value (yet).⁹³
- (ii) Such statements are (for now) only "indefinitely" or "indeterminately"

⁹³ William Ockham, for example, gives in *Sentences* I.38 the following account of Aristotle's view in the passages I have just quoted (from *Philosophical Writings*, p. 133): "a future contingent fact simply depends on a free power and hence is not true in itself, because [--] no reason can be assigned why one side of the contradiction is true rather than the other, and therefore either each part is true, or neither one is true. But it is not possible that each part be true; therefore neither part is true [--]." Ockham goes on to say that "this proof is conclusive, according to the way of the Philosopher, only as regards facts that are in the power of the will" in contrast to "those facts which are not in the power of the will but which simply depend on natural causes, as for instance that the sun will rise" with respect to which "the argument is not conclusive" because "a natural cause is determined to one side" of a contradiction, and "natural causes cannot be impeded except by a free cause" (i.e. by an action deriving from a free decision). See also Ockham's *Summa logicae* III.3.30 (p. 110 in Ockham 1320-3) and *Commentary on Aristotle's De interpretatione, Chapter 9* (*ibid.*, p. 106).

For more about the history of this interpretation, see e.g. Normore 1982 (esp. p. 362), Sorabji 1980 (92f.) and Rescher 1968 (184f.).

true or false.⁹⁴

- (iii) Such statements are (for now) only more or less *probably* true or false.⁹⁵

I shall not try to decide which, if any, of these proposals best corresponds to Aristotle's intention. What is common to these proposals is that they seem to deny the premise (P01), i.e. to deny *the principle of bivalence* – "all proper statements are either true or false"⁹⁶ – for statements concerning contingent future events. Also, (i) but not (ii) and (iii), on a natural construal, violates "the validity of the trivial disjunction" – "all statements of the form $p \vee \sim p$ are true".⁹⁷ Since I think both these principles are worth keeping, even in

⁹⁴ Ibn Rushd (a.k.a. Averroes, 1126-98), for instance, seems to have this opinion of Aristotle's intention: "one of the two contradictories must exist in the future, yet not in a completely definite manner, but rather in a not definite manner, as they are naturally, which is the way they are for us. Therefore it is not possible to acquire knowledge of this genus, for the matter is in itself unknown" (from Ibn Rushd's *Middle Commentary on Aristotle's De Interpretatione*, §38; p. 147 in Butterworth 1983). In Theod. §331 Leibniz, in turn, writes: "Aristotle, who fully recognized contingency and freedom, [--] went too far, saying that propositions on contingent futurities had no determinate truth; on which point he was justifiably abandoned by most of the Schoolmen."

For more about the history of this interpretation, see for instance Normore 1982 (esp. p. 370), Sorabji 1980 (93f.) and Rescher 1968 (187f.).

⁹⁵ It is not an entirely implausible suggestion that Aristotle is trying to put forward the following: If p' represents a future contingent, and there is x % chance that p will be true (where x is greater than 0 and smaller than 100), there is $100-x$ % chance that $\sim p$ will be true. Then it is natural to say that while all statements of the form $p \vee \sim p$ are true (i.e. 100 % true), (P01) is false; and further, while (P02) and (P03) are true, they are irrelevant with respect to future contingent statements, for necessity does not follow from either x % or $100-x$ % truth (when $0 < x < 100$). (However, I will disregard this suggestion in the sequel.)

⁹⁶ Where "true" and "false" mean, of course, "100 % true" and "100 % false", respectively.

⁹⁷ Cf. here the following interesting passage from Cicero's *On Fate* (xvi.37):

Epicureans [--] say that propositions of this sort [i.e. future contingents] are neither true nor false, or else, when ashamed of that, they nevertheless make the still more impudent assertion that disjunctions consisting of contrary propositions are true, but that the statements contained in the propositions are neither of them true.

connection with statements concerning the future, I think we should not deny (P01).

3.2 Possible worlds necessity, alwaysness and unalterability

Quite apart from the question, what exactly is the solution Aristotle provides, the argument from (P01)-(P03) to (C0) is certainly in need of clarification. In particular, it must be considered what "necessity" is supposed to mean in this argument – this consideration is often neglected in the literature.⁹⁸ I shall consider the following three alternatives: Necessity as it is nowadays construed (the *possible worlds interpretation*), necessity as alwaysness (the *statistical interpretation*) and necessity as the unalterability or inevitability of the actual course of events (the *unalterability interpretation*). I shall maintain that Aristotle is talking about the last sort of "necessity", and that this sort indeed produces a difficulty that needs to be accounted for.

If we take "necessary" in its standard contemporary sense (and with its standard treatment), or, alternatively, in a Leibnizian sense (cf. chapter 4 below), there seems to be no problem at all: The premises (P02) and (P03) are false. For, considering (P02) – (P03) is of course analogous – even if it is now true to say that *E* will, i.e. will *actually* be, it appears not to be necessary, in the modern or Leibnizian sense, that *E* will be, i.e. it seems entirely natural that *E* will not be in some possible world other than the actual world. Putting this in a Leibnizian manner, even if *E* will be in the actual history and even if, consequently, *E* will *inevitably* or "assuredly" actually be, God could have selected some other world, *w*, in which *E* will not be, which is to say that it is

Accordingly, at least some Epicureans seem to have separated the principle of bivalence from the principle that all statements of the form $p \vee \sim p$ are true. In their view, if Cicero's testimony is accurate, sometimes only the latter principle holds for good.

⁹⁸ E.g. in Haack 1974 (73f.), Mondadori 1991.

not necessary that *E* should be.

It should be clear that this notion of necessity is not what Aristotle, and subsequently, his medieval followers, are talking about. Aristotle either accepted (or would have accepted) this possible worlds notion of necessity or did not accept it. If he did not accept it, he of course is not talking about it. If he accepted it and was talking about it in his argument, he would of course have realized, first, that the argument is not sound (because (P02) and (P03) are false), and secondly – and even more significantly – that not only the future is contingent in this sense, but also the present and the past as well: The past could have been, and the present could be, different from what they actually were/are. However, it is definitely an Aristotelian doctrine that unlike the future, the past and the present are "necessary" – let us call this the *asymmetry thesis*. Aristotle brings up the view that the past and the present are "necessary" twice in the chapter 9 of *De Interpretatione*, i.e. the chapter we are presently discussing: "In the case of that which is or which has taken place, statements, whether positive or negative, must be true or false" (18a28); "what is necessarily is, when it is" (19a25). Further, in *Nicomachean Ethics* VI.2 (1139b8-11) we find:

[N]o one deliberates about the past, but about what is future and contingent, while what is past is not capable of not having taken place; hence Agathon is right in saying 'For this alone is lacking even to God, to make undone things that have once been done'.

Moreover, in *Rhetorics* III.17 (1418a5) Aristotle states that "there is no contingency in what has now already happened".⁹⁹ This asymmetry thesis is

⁹⁹ And cf. also *On the Heavens* I.12, 283b12f.

repeated by later Aristotelians, e.g. by Boethius¹⁰⁰ (c. 470-526), Aquinas¹⁰¹ (1225-74) and Ockham.¹⁰²

The contemporary conception of necessity and possibility, as well as that of Leibniz', is symmetrical with respect to future and past, while Aristotle's notion is not. My conclusion is, then, that Aristotle's "necessity" is not the "possible worlds necessity".

3.3 The statistical interpretation

Let us consider next Aristotle's *statistical interpretation* of necessity. According to the common ancient Greek conception of a statement (*logos*) and belief or opinion (*doxa*), what is stated or believed is *temporally indefinite*, or, in terms I have used above, *temporally unstable*.¹⁰³ Aristotle expresses this view very clearly in *Categories* 5 (4a23-b2):¹⁰⁴

For the same statement seems to be both true and false. Suppose, for example, that the statement that somebody is sitting is true; after he has got up this same statement will be false. Similarly with beliefs. Suppose you believe truly that somebody is sitting; after he has got up you will believe falsely if you hold the same belief about him. [--] Statements and beliefs [--] themselves remain

¹⁰⁰ *Consolation of Philosophy* 5.6: "take the sun rising and a man walking; while these operations are occurring, they cannot but occur: but the one was bound to occur before it did; the other was not so bound".

¹⁰¹ *Truth* 2.12 *sed dicebat* 7: "whatever is said about the past, if true, is necessary; for, since it has been, it cannot not have been. Therefore, it is absolutely necessary". *Ibid.* 2.12 ad 2: "From the moment that [a contingent] is, it cannot not be when it is; for 'what is must be when it is', as is said in *Interpretation*".

¹⁰² Ockham 1320-3, e.g. pp. 36, 38, 85, 92, 113.

¹⁰³ That is, *contingent* statements are temporally unstable.

¹⁰⁴ See also e.g. *Metaphysics* IX.10, 1051b13-7.

completely unchangeable in every way; it is because the *actual thing* changes that the contrary comes to belong to them. For the statement that somebody is sitting remains the same; it is because of a change in the actual thing that it comes to be true at one time and false at another. Similarly with beliefs.

Aristotle's view is, then, that what is stated in a typical empirical sentence, and what is believed in an empirical belief, is something the truth value of which changes with time – the view I have opposed and argued against in chapter 2 above.¹⁰⁵

Under this conception of statements as capable of having changing truth value over time, Aristotle suggests that a statement is necessarily true if, and only if, it is *always* true, i.e. true at all times, i.e. true *sempiternally*; and that a statement is possibly true whenever it is true at some time or other. This is stated, for example, in *Metaphysics* IX,¹⁰⁶ *Physics* IV.12,¹⁰⁷ *On Generation and Corruption* II;¹⁰⁸ and, by the following words, in *On the Heavens* I.12 (281b15-

¹⁰⁵ Aristotle's contention, presented in section 2.9 above, that there can be no knowledge of particular empirical items becomes now apparent: This follows from the requirement that only what is permanently true can be known (see e.g. *Metaphysics* XIII.4, 1078b15-7) when combined with Aristotle's view that a sentence such as "Socrates is running", (i) expresses the same opinion whenever it is uttered, and (ii), is temporally indefinite (i.e. is sometimes true, sometimes false). Cf. esp. Hintikka 1967.

¹⁰⁶ "He who says of that which is incapable of happening either that it *is* or that it *will be* will say what is untrue; for this is what incapacity means"; "evidently it cannot be true to say 'this is possible but *will not be*'"; "for to say that *B* must be possible if *A* is possible, means this, that if *A* is real *at the time* when [--] it was supposed capable of being real, *B* must then [--] be real" (1047a12-4, b4-5, b27-30; my emphasis).

¹⁰⁷ "A thing whose contrary is not *eternal* can be and not be, and it is of such things that there is coming to be and passing away" (222a7-9; my emphasis).

¹⁰⁸ "The cause by way of matter of things which come to be is that which is capable of being and not being. For some things of necessity are, i.e. the eternal things, and some things of necessity are not [--]; some things, however, are capable both of being and of not being – which is what that which comes to be and perishes is. For this is *at one time* and at another is not."; "hence a thing is *eternal* if it is by necessity; and if it is *eternal*, it is by necessity"

23; my emphasis):

A man has [--] the capacity at once of sitting and of standing, because when he possesses the one he also possesses the other; but it does not follow that he can at once sit and stand, only that *at another time* he can do the other also. But if a thing has for infinite time more than one capacity, another time is impossible and the times must coincide. Thus if anything which exists for infinite time is destructible, it will have the capacity of not being. Now if it exists for an infinite time let this capacity be actualized; and it will be in actuality at once existent and non-existent. Thus a false conclusion would follow because a false assumption was made [--].

Further, in *De Interpretatione* 9 we find (18b12-3, 19a33-6; my emphasis):¹⁰⁹

But if it was *always* true to say that it was so, or would be so, it could not not be so or not be going to be so. [--] So, since statements are true according to how the actual things are, it is clear that wherever these are such as to allow of contraries as chance has it, the same necessarily holds for the contradictories also. This happens with things that are not *always* so or are not *always* not so.¹¹⁰

(335a32-b3, 338a1-3; my emphasis).

¹⁰⁹ This statistical conception of necessity seems to have been quite common in antiquity. For example, the famous Master Argument of Diodorus Cronus (d. c. 307 or 284 BC), as reported by Epictetus (55-135 AD), goes as follows: Every true proposition about the past is necessary; the impossible does not logically follow from the possible; therefore, whatever is true now and always in the future, is necessary (from Vuillemin 1996, 3; it is a controversial issue how exactly the conclusion is supposed to follow from the premises). The most prominent commentator of Aristotle in the late antiquity, Alexander of Aphrodisias (fl. c. 200 AD), still states that "what is necessary is what is always true" (*On Fate* 177.9).

¹¹⁰ Not all of these passages, especially this last one, are entirely conclusive as pieces of evidence for the ascription of statistical conception of necessity to Aristotle. For it is natural even for us today to say something like, "The validity of the trivial disjunction means that statements of the form $p \vee \sim p$ are *always* true". If in the year 4340 somebody finds some fragments containing such statements, perhaps he or she will conclude, on the basis of the word "always": "About two millennia ago, philosophers and logicians generally regarded validity as having something to do with time."

As we saw above, the basic form of a statement is for Aristotle exemplified by

Socrates is sitting.

This states something, viz. a definite *logos*, that is, say, true *now* but false *tomorrow at noon*. On the statistical construal of necessity, this means that this *logos* is, although true now, not necessarily true, for there is a time – tomorrow at noon – when it is false. The fact that this temporal conception of necessity (and possibility) seems to appear in *De Interpretatione* 9, as we just saw, definitely gives some support for the claim in Aristotle's argument from (P01)-(P03) to (C0) "necessity" is to be taken statistically. Let us thus consider more closely Aristotle's own example, occurring in 18b25 and 19a30-3, of a troublesome statement concerning a future event, viz.

A sea-battle takes place tomorrow,

or, in order to be more definite, let us consider:

(31) A sea-battle begins tomorrow at noon.

We see that this is a temporally *definite* statement and thus not of the form Aristotle takes to be a basic form of a statement – perhaps this is the cause of Aristotle's trouble. For it seems that we may still ask whether (31) is true at a particular moment of time; e.g. whether it is true *already now*. However, it seems curious that Aristotle's example contains the *indexical* "tomorrow", for it should seem natural for Aristotle to say that even though (31) is true now (let us assume) it "becomes false" at the very first moment of tomorrow (assuming that no sea-battle begins at noon on the day after tomorrow), i.e. even *before* the fight begins tomorrow at noon.

On the other hand, in his sea-battle example Aristotle seems to be talking about the alleged "necessity" of a sea-battle at the definite moment of time (viz., tomorrow at noon). In modern terms, an indexical such as "tomorrow" is then

regarded as *directly referential* in the sense that a different statement is made by (31) today and tomorrow (because "tomorrow" has a different referent in these uses). In order to avoid further speculation over Aristotle's account of explicitly indexical statements, let us get rid of the indexical in (31), and, in the interest of gaining more clarity, let us change the example altogether and consider,

(32) Kofi Annan is sitting at noon on November 7, 2010.

Now, according to the statistical interpretation of Aristotle's word *anagke*, as applied to this sitting example, we have, first, for temporally indefinite statements,

If "Kofi Annan is sitting" is always true (false), then "Kofi Annan is sitting" is necessarily true (necessarily false, respectively),

and secondly, and analogously, for temporally definite statements,

(33) If "Kofi Annan is sitting at noon on November 7, 2010" is always true (false), then "Kofi Annan is sitting at noon on November 7, 2010" is necessarily true (necessarily false, respectively).

Now, it surely seems that we should say that the temporally definite (32) is always true, if true at all, and thus, by (33), is true necessarily. Then, under the statistical interpretation Aristotle's argument, as given in terms of this example, is perhaps the following:

(P11) "Kofi Annan is sitting at noon on November 7, 2010" is at t either true or false.

(P12) If "Kofi Annan is sitting at noon on November 7, 2010" is true at t , it is true at all times, and hence, "Kofi Annan is sitting at noon on November 7, 2010" is necessarily true.

- (P13) If "Kofi Annan is sitting at noon on November 7, 2010" is false at t , it is false at all times, and hence, "Kofi Annan is sitting at noon on November 7, 2010" is necessarily false.
- (C1) "Kofi Annan is sitting at noon on November 7, 2010" is necessarily true or necessarily false, i.e. either Annan is necessarily sitting at noon on November 7, 2010, or is necessarily not sitting at that time.

The key point in the present interpretation is that Aristotle's problem derives from the application of this statistical construal of necessity to temporally definite statements, with the consequence that the mere *p-at-s* is equivalent to *Necessarily p-at-s* (since these both are equivalent to *Always p-at-s*). This is not problematic with respect to the past and the present (or so it is held): If in the argument just given the moment of time t is simultaneous with or later than the moment *noon on November 7, 2010*, there is, according to Aristotle and many others, no difficulty – the past and the present events are necessary, and the statements describing such events are necessarily true (now): "With regard to what is and what has been it is necessary for the affirmation or the negation to be true or false" is the first sentence of *De Interpretatione* 9. However, if t is prior to noon on November 7, 2010, an unacceptable result follows, according to Aristotle (on the present interpretation): Every definite future event is either necessary or impossible, or, in other words, whatever happens, happens of necessity. As I have pointed out above, Aristotle's solution seems to amount to the denial of the premise (P11) in case of t being prior to noon on November 7, 2010.

It may seem that the present statistical interpretation of Aristotle's sea-battle argument receives some support from the following passage in 19a23-4:

- (34) "Whatever is necessarily is, when it is [--]. But not everything that is, necessarily is [--]."

According to the present interpretation of necessity Aristotle intends here to

put forward something like the following: Considering a contingent temporally indefinite statement $p\text{-at-}\xi$, which is, by assumption, true at s , the respective temporally definite statement $p\text{-at-}s$ is necessarily true (because it is always true), while the mere $p\text{-at-}\xi$ is not necessarily true (because for some t different from s $p\text{-at-}t$ is false).¹¹¹

However, there is a problem with (34) that casts a doubt over this interpretation of Aristotle's intention in *De Interpretatione* 9, for the passage given in (34) continues as follows (19a25-33):

For to say that everything that is, is of necessity, when it is, is not the same as saying unconditionally that it is of necessity. Similarly with what is not. And the same account holds for contradictories: Everything necessarily is or is not, and will be or will not be, but one cannot always divide and say that one or the other is necessary. I mean, for example: it is necessary for there to be or not to be a sea-battle tomorrow; but it is not necessary for a sea-battle to take place tomorrow, nor for one not to take place – though it is necessary for one to take place or not to take place.

The words "unconditionally" and, especially, "divided" suggest that Aristotle is here appealing to his distinction between *composite* and *divided* sense of alethic statements. In *Sophistical Refutations* 4 (166a22-30) Aristotle makes this distinction in the following manner:¹¹²

Amphiboly and ambiguity, then, depend on these modes of speech. Upon the combination of words there depend instances such as the following: "A man can walk while sitting", and "he can write while not writing". For the meaning is not the same if one divides the words and if one combines them in saying that "it is possible to walk-while-sitting". The same applies to the latter phrase, too, if one combines the words "to write-while-not-writing": for then it means that he has the

¹¹¹ Cf. Ockham 1320-3, pp. 103-4.

¹¹² See also

Prior Analytics I.10 (30b30-40)

Physics II.9 (199b34-200b11)

On Generation and Corruption II.11 (337b14f.)

Parts of Animals I.1 (639b20f.).

power to write and not to write at once; whereas if one does not combine them, it means that when he is not writing he has the power to write.

Accordingly, in 19a25-33 Aristotle is probably simply saying that one should not confuse the statement, "if p , then p ", which is necessarily true, with the statement "if p , then necessarily p " (or with the simple statement "necessarily p "). That Aristotle then parallels this with the case of "contradictories" should accordingly mean that the premise (P01), i.e. "If it is true to say that E will be, E necessarily will be" – and analogously (P02) – is to be understood as a trivial statement "It is necessarily true to say that if E will be, E will be".¹¹³

However, this interpretation of what Aristotle has in mind has a couple of weaknesses: First, Aristotle's own example is a temporally definite statement, "A sea-battle will take place *tomorrow*" (which, moreover, *is* unchangeably true (if true at all), at least if "tomorrow" is treated as directly referential); secondly, it leaves unexplained Aristotle's following statement, which clearly indicates some conception of "less than 100 % truth" as a solution to the dilemma: "With [statements that are not always true or are not always false] it is necessary for one or the other of the contradictories to be true or false – not, however, this one or that one, but as chance has it; or for one to be true *rather* than the other, yet not *already* true or false" (19a36-9). Furthermore, the "already" at the end of this passage suggests that such statements may *become true* (or false) – that is, may become 100 % true (or false) – in their due time.

¹¹³ Some present-day writers, e.g. Susan Haack (1974, 78-81; 1978, 209) and Benson Mates (1986, 118), hold that Aristotle in his sea-battle argument simply confuses these two senses, divided and composite, of statements involving necessity. I think this is an extraordinary hypothesis, for, first, Aristotle himself is the original author of the distinction – which makes it highly improbable that he is confused in this way – and secondly, as I just pointed out, Aristotle practically appeals to this distinction in the very chapter where the sea-battle problem is posed.

3.4 The inevitability interpretation

The statistical interpretation is at any rate rather uninteresting because if it is assumed the argument is easily dismissed – without the suspicious denial of the principle of bivalence – from the point of view of the modern possible worlds semantics, as well as that of Leibniz': The problem seems to be wholly due to Aristotle's peculiar statistical reading of "necessarily".¹¹⁴ On the "correct" construal, it is said, modal statements should be analysed with reference to possible worlds – and under this analysis the premises (P12) and (P13) are false: Many statements concerning the future events that are (actually) true already now are contingent in the sense that our future is different in different possible worlds (to put it rather roughly).

I think there is still another interpretation of Aristotle's argument in which the problem is not so easily eliminated – and I think this is the real problem of determinism. When Aristotle says that the past is "necessary", I think he means that the *actual* past is, or the *actual* past events are, *unalterable* or *unpreventable* or *uncancellable* or *irrevocable*. In contrast, it intuitively seems that we may have some influence on what the actual future will be, or that there is *potentiality* for alternative future courses of events (cf. 19a8-17, quoted above) – the future is not "necessary", i.e. is not unalterable, or in more natural terms, the future is not *inevitable* or *ineluctable* or *inescapable* or *unpreventable* or *unavoidable* (that is, to be more precise, no *definite* future seems so).¹¹⁵ I think this sort of consideration is behind the asymmetry thesis. On this construal, Aristotle's argument, when given in terms of Annan's sitting, assumes the following form:

¹¹⁴ By calling Aristotle's reading peculiar I mean it is so from our contemporary point of view.

¹¹⁵ Cf. here e.g. Anscombe 1956, Jeffrey 1979.

- (P21) Either Kofi Annan is [was, will be] sitting, or Kofi Annan is not sitting, at the moment of time t in the actual world α .
- (P22) If Kofi Annan is sitting at t in α , then Kofi Annan is unalterably sitting at t in α .
- (P23) If Kofi Annan is not sitting at t in α , then unalterably, Kofi Annan is not sitting at t in α .
- (C2) Kofi Annan is unalterably sitting at t in α or unalterably, Kofi Annan is not sitting at t in α .

Now, we may view this argument from the point of view of a moment of time that is, (i) posterior to or the same as t , or, (ii) prior to t . According to the asymmetry thesis these cases are dissimilar.¹¹⁶ If t is present or in the past – the case (i) – then there is, it is said, no difficulty in the conclusion; e.g. "Kofi Annan was unalterably actually sitting at noon on December 3, 1990, or unalterably, Kofi Annan was not actually sitting at that time" is said to be unproblematically true, for either Annan was actually sitting at the mentioned time or was not, and, (a), if he actually was sitting at that time, his actual sitting then cannot be cancelled any more, and, (b), if he was not actually sitting at that time, his actual sitting cannot be made to happen any more. We (or even God) cannot bring it about that the actual past is different from what it was, i.e. cancel the actual past or add new events into it.

On the other hand, Aristotle and others regard the case (ii) as problematic.

¹¹⁶ Admittedly, it is curious to consider a logical argument from the point of view of two separate moments of time. However, I have tried to avoid the excessive reference to instants in the argument itself, with the consequence that due to alleged asymmetry of the truths concerning the future and the past, the "time of application" makes a difference in the argument. (Or so it seems at first sight; in reality there is no such difference, because the asymmetry thesis is false, as we shall see shortly.)

"Annan unalterably will actually be sitting at noon on November 7, 2010, or unalterably, Annan will not be actually sitting at noon on November 7, 2010" is in contradiction with the following intuition: Annan may actually be sitting at noon on November 7, 2010, but, on the other hand, it may also happen that he will not be sitting then; neither his actually sitting at noon on November 7, 2010 nor his not actually sitting then seems unalterable. As I have indicated above, Aristotle's way out of this dilemma seems to be to deny the principle of bivalence when applied to statements concerning the future, i.e. to deny the premise (P21) in our last argument (in case of t 's being in the future).

Notice that an appeal to the contemporary approach to necessity, or to that of Leibniz', does not remove the problem in the argument from (P21)-(P23) to (C2), for what is at stake here is *actual* unalterability (or inevitability) and not necessary truth as construed as truth in all possible worlds. Indeed, in DM §13 (1686) Leibniz writes that "everyone grants that [actual] future contingencies are assured since God foresees them" – and again in Theod. §37 (1710) that "they say that what is foreseen [by God] cannot fail to exist and they say so truly" – and then goes on to explain that many foreseen events are, although *certain, not necessary*, because they do not hold in other possible worlds. In the argument we are discussing, other possible worlds are irrelevant – only the actual history is under consideration. All in all, the argument in question is wholly general, and although it (allegedly) is not problematic with respect to the past, it seems to imply, when applied to the future, that the actual history is inevitable. This implication seems problematic e.g. with respect to free will (cf. the next chapter).

In terms of the Aristotelian approach to statements as something that may change their truth value, if " S^t " is true at s , where the moment of time t is earlier than the moment s , " S^s " is unalterably true at s , and if " S^t " is true at t , it is unalterably true then (and always thereafter). I think this latter is what Aristotle means to express by his assertion "what is necessarily is, when it is" (19a25). On the other hand, if t is (initially) in the future, Aristotle seems to

think that " S^t " is truth-valueless¹¹⁷ up to t , then *becomes* true or false at t , and is true or false always thereafter – that is, " S^t " is unalterably true or unalterably false from t on. Cf. here Cicero (106-43 BC), *De Fato* 7.14: "all things true in the past are necessary [--] because they are unchangeable and because what is past cannot turn from true into false [--]". William Ockham, in turn, holds in *Predestination, God's Foreknowledge and Future Contingents* that "if the proposition 'this thing is' [--] is true now, then 'this thing was' will be true forever after, nor can God in His absolute power bring it about that this proposition be false" (Ockham 1320-3, p. 36).

I think we should not follow Aristotle in his restriction of the principle of bivalence to statements that are about the present or the past. Of two opposite predictions concerning the actual future one is true, i.e. *already* true, and the other is false (cf. 18b34-7, 19a3-5). Since I do not accept the conclusion (C2) either, or at least I do not acknowledge it as problematic,¹¹⁸ it is evident that I must deny the premises (P22) and (P23), i.e. deny them insofar "alterably" is taken in a sense that is regarded as troublesome with respect to (C2). These premises are parallel – the denial of one means the denial of the other; I shall concentrate on (P22). Let us first consider the premise (P22) as applied to the past – even though this is said to create no problem – i.e. let us assume that the moment of time t is in the past. More precisely, let us consider the following example, arising from (P22):

(P22a) If "Annan was actually sitting at noon on December 3, 1990" is true, then Kofi Annan was unalterably actually sitting at noon on December 3, 1990.

Now, if the assertion that something is unalterable makes sense, so must do the

¹¹⁷ Or at least less than 100 % true or false.

¹¹⁸ I.e. I accept it only in a sense in which "unalterably" is unproblematic – this is a sense I am about to explain.

assertion that this something is alterable. Let us ask, then, what it means to say that Annan's actually sitting at noon on December 3, 1990, can be altered. I think it should strictly speaking mean that one brings it about that the *actual* past is such that Annan is not sitting at that time. However, this does not strictly speaking make sense, for the actual past is as it is and if it were so to speak altered, it would not be the actual past (but some "other past"). It could be said that Annan's actually sitting at that designated time is alterable only if there is *another universe of possible worlds*, with *another actual world* such that Annan's actual sitting (i.e. sitting in the actual world of "our" universe of possible worlds) at noon on December 3, 1990, did not take place at noon on December 3, 1990, in that "other actual world" (i.e. in "the actual world of that other universe"). In other words, cancelling an actual past event would mean bringing about *another* actual world, belonging to an alternative universe of possible worlds, so that this event does not happen in that "another actual world".

However, these notions of "another universe of possible worlds" and, especially, "another actual world" surely do not make sense. Thus, the alterability or unalterability of the actual past does not make sense either. "The (actual) past is unalterable", taken literally, does not make sense – what I think is really meant is, simply, "The actual past is what it is", or "The actual past belongs to the history as it actually is".

The case with respect to the future is of course analogous. Consider, for example:

- (P22b) If "Kofi Annan will actually be sitting at noon on November 7, 2010" is true, then Kofi Annan will inevitably be actually sitting at that time.

Again, inevitability should mean that Kofi Annan is sitting at the mentioned time in the actual world of every universe alternative to our universe of possible worlds. This is nonsense, and so is (P22b), if taken literally. What

(P22b) says is the following instance of the trivial *Que sera sera*:

(P22c) If "Kofi Annan will actually be sitting at noon on November 7, 2010" is true, then Kofi Annan will actually be sitting at that time.

This is of course true – and so is the respective reduction of (P23). Thus, under this construal the conclusion (C2) reduces to the following triviality (as applied to our present example): Kofi Annan will actually be sitting at noon on November 7, 2010, or he will actually not be sitting at that time. This is trivially true, and the problem has disappeared.

3.5 Conclusion: No asymmetry

To take another, summarizing example, let us consider the assassination of Caesar that actually took place on the ides of March, 44 BC. Brutus is absolutely correct when he on the nones of that month says, "Caesar will be assassinated". That there is a true *futura contingitia* which Brutus thus expresses does not mean that that assassination was unpreventable (in any problematic sense). When we say that something in the past could have been prevented from happening, we do not mean that it could have been prevented from *a-happening*, that is, that it could somehow be erased from the actual history as it is. However, this inerasability is, I think, what Aristotle and others mean by the "necessity" of the past. Similarly, to return to the Caesar example, if Brutus on the nones as it were takes it for granted that Caesar's assassination will actually take place, that is, *assumes* that such an event will belong to the actual history, it is undoubtedly true for him to say that it will belong to it, and, furthermore, once this is assumed, there is no sense in claiming that it is erasable. *Since* it will be, it will "inerasably" be a part of the actual history. Or, in other words, the *actual* future is not erasable or "cancellable" because everything that will happen (including what will be done freely) is contained in the very notion of *the actual future*. Still, the future might be different from what it actually is (i.e. will be): It is an issue entirely separate from the

determinateness of the *actual* future, that, for instance, on the nones of March, 44 BC, there may have been alternative possible futures in some of which Caesar would not have been murdered on the ides (just as from our point of view there may be such alternative possible pasts). The asymmetry thesis is based on a confusion: With respect to past, the fixity of *actual* history is appealed to, while with respect to future, *alternative* possible histories are considered.¹¹⁹

All in all, I think the problem of future contingents arises from the fact that we are bound to treat the history of the world from a timeless (and worldless) point of view, when making statements concerning definite events that may happen in the future.¹²⁰ This timeless vantage point is God's vantage point in the traditional theology of St. Augustine, Boethius, Aquinas and others. Somebody who agrees with me that it is strictly speaking wrong to say that the *actual* future is inevitable – it is what it is, or will be what it will be – may still feel some uneasiness over the apparent presumption made here, that the actual future is, as it were, "already there" (which locution is of course also highly misleading). If we take this attitude that the actual future timelessly *is*, human free will may seem to be under threat. Further, if there is an omniscient entity, viz. God, he knows this future, which in itself has often been regarded as problematic with respect to human freedom – not to mention the traditional (Judaic-Christian-Islamic) theological contention that God has a detailed plan of our world, from the beginning to the end, so that everything is to happen exactly according to God's decrees. I shall now turn to these traditional theological questions involving God's foreknowledge and providential control, and human free will.

¹¹⁹ According to Normore 1982 (365, 375-7), such scholastics philosophers as Robert Grosseteste (c. 1168-1253), Thomas Bradwardine (1290-1349) and Peter of Ailly (1350-1420) also denied the asymmetry thesis.

¹²⁰ It might be said that the inevitability involved in Aristotle's argument is only bogus inevitability or pseudo-inevitability.

4 Theological Determinism and Free Will

4.1 Providence, free will and evil: The problem

According to traditional (Christian, Jewish and Islamic) theology, *omniscience*, or knowledge of everything knowable, is one of God's attributes. Standardly, this is taken to include *foreknowledge*, or knowledge of what lies in the future – i.e. is in the future at least from the temporal vantage point of the creatures (if not from God's timeless point of view). This attribute of God creates one of the major theological problems, for it has seemed to many that if the future events are "already" known, they must be as it were "already there", and thus, the total history of the world, including the future (from our temporal point of view) is fixed, which is to say that the history of the world is *predetermined* from the beginning to the end. This apparent consequence of the divine foreknowledge, that the world is predetermined, is often found unacceptable on the basis that it – it is alleged – excludes *free will* (of e.g. human beings). "If all things are foreseen by God, the order of causes is certain; but if so, all things happen by fate, nothing is left in our power, and there is no such thing as free will", Aquinas in *Summa Contra Gentiles* 3.94 (inaccurately) quotes from Cicero's *On Divination* 2.8.

Some theologians have tried to eliminate this problem – perhaps following Aristotle's strategy in solving the sea-battle dilemma (on one interpretation) – by asserting that statements concerning future contingents are not true or false (yet) and since what is not true or false (yet) cannot be known (yet), God does not know the future (or at least does not know future contingencies) but is still

omniscient, knowing everything there is to be known.¹²¹

Only a small minority of theologians have advocated this "most manifest folly"¹²² and "most insane impiety"¹²³ of denying foreknowledge of God, for there are insurmountable problems with this proposal, at least from the theological and biblical point of view. First, it seems to be thought here that God does not know, at *t*, whether a contingent future event will happen at *s*, where *s* is later than *t*, but then *comes to know*, at *s*, whether it happens or not – this appears to be inconsistent with God's attribute of *immutability*.¹²⁴ Secondly, and more importantly, the traditional view has it that all creatures are under God's close *providence*, by which it is meant that God, not only creates the world but preserves it and governs everything that happens in it through its history – this is affirmed over and over again in the Bible.¹²⁵ God's providence

¹²¹ Cahn 1967 (76-82) mentions Maimonides (1135-1204), Peter Aureoli (c. 1280-1322) and Gersonides (1288-1344) as scholastic philosophers with this inclination of denying God's knowledge of the future.

¹²² St. Augustine, *The City of God* 5.9.

¹²³ St. Augustine, *On Free Choice* 3.ii.4.

¹²⁴ On the other hand, the point of view of changelessness of section 2.12 may be used here to avoid the problem in question: God timelessly both *t-not-knows* and *s-knows* whether that event happens without changing at all (for from this point of view God never loses his *t*-ignorance nor gains *s*-knowledge, but has these both timelessly).

¹²⁵ "*Providence* – literally means foresight, but is generally used to denote God's preserving and governing all things by means of second causes [-- (I omit references to the Bible)]. God's providence extends to the natural world [--], the brute creation [--], and the affairs of men [--], and of individuals [--]. It extends also to the free actions of men [--], and things sinful [--], as well as to their good actions [--]. As regards sinful actions of men, they are represented as occurring by God's permission [--], and as controlled [--] and overruled for good [--]. God does not cause or approve of sin, but only limits, restrains, overrules it for good. The mode of God's providential government is altogether unexplained. We only know that it is a fact that God does govern all his creatures and all their actions; that this government is universal [--], particular [--], efficacious [--], embraces events apparently contingent [--], is consistent with his own perfection [--], and to his own glory" – Easton's

in itself indicates predetermination – and the connection to omniscience, including foreknowledge, is apparent: God is said to have *providential plan* of the whole history in the tiniest detail. The history itself is the unfolding of this plan¹²⁶ – thus, it must be that God knows everything involved in this plan, even things that are in the future from our creatural point of view. In fact, the view that the history of the world – meaning, each and every detail in the world history – has followed and will follow God's preset plan implies predetermination even more compellingly than God's omniscience. The Bible also talks about the *decrees of God*, which term Easton's *Bible Dictionary* explains as follows (my emphasis):

The decrees of God are his eternal, unchangeable, holy, wise, and sovereign purpose, comprehending at once *all things that ever were or will be* in their causes, conditions, successions, and relations, and *determining their certain futuration*. The several contents of this one eternal purpose are, because of the limitation of our faculties, necessarily conceived of by us in partial aspects [--. A] decree [--], comprehending a *plan* including all [God's] works of all kinds, great and small, *from the beginning of creation to an unending eternity*; ends as well as means, causes as well as effects, conditions and instrumentalities as well as the events which depend upon them, must be incomprehensible by the finite intellect of man. The decrees are eternal (Acts 15:18; Eph. 1:4; 2 Thess. 2:13), unchangeable (Ps. 33:11; Isa. 46:9), and comprehend *all things that come to pass* (Eph. 1:11; Matt. 10:29, 30; Eph. 2:10; Acts 2:23; 4:27, 28; Ps. 17:13, 14).

Most theologians and philosophers of religion have taken the position that the world indeed is predetermined by God. After all, besides affirmations of God's omniscience, of his all-embracing providential plan and of his all-determining decrees, the Bible contains even direct statements to the effect that the history

Bible Dictionary.

See also the entry *Providence* in *Catholic Encyclopedia*.

¹²⁶ Thus e.g. Aquinas, *Summa Contra Gentiles* 3.94: "Divine providence, [--] being absolutely perfect [--], arranges all things by the eternal forethought of its wisdom, down to the smallest details, no matter how trifling they appear. And all agents that do any work act as instruments in His hands [--] to the unfolding of that order of providence in creation which He has from eternity devised."

of the world is predetermined and foreknown.¹²⁷

Predetermination gives rise to two traditional problems: The *problem of free will* and the *problem of evil*. It seems to follow from predetermination that there is no human free will. On the other hand, there are morally bad actions – we, human beings, commit *sins*, the Bible and all theologians tell us. However, no agent that fails to have free choice can be held *responsible* for its actions, including sinful ones. (Furthermore, the devil – if there such be – is apparently a prisoner of God's preordination just as well.) Thus, God himself must be held responsible for all sins. Moreover, God is the determining source of not only sins but of all other evils in the world just as well. In our everyday life, each of us can surely find thousands and thousands of details with respect to which the world could be better, not to mention more significant global matters, like wars and famine. If God has created the world and alone has decided its whole course, nobody or nothing else is responsible if there are bad

¹²⁷ For example, in

2 Kings 19:25 (God is here the speaker):

"Have you not heard that I determined it long ago? I planned from days of old what now I bring to pass, that you should turn fortified cities into heaps of ruins [–]"

Acts 2:23, 4:27-8:

[–] Jesus, delivered up according to the definite plan and foreknowledge of God, you crucified and killed by the hands of lawless men. [– F]or truly in this city there were gathered together against thy holy servant Jesus, whom thou didst anoint, both Herod and Pontius Pilate, with the Gentiles and the peoples of Israel, to do whatever thy hand and thy plan had predestined to take place.

Rom. 8:28-30:

We know that in everything God works for good with those who love him, who are called according to his purpose. For those whom he foreknew he also predestined to be conformed to the image of his Son, in order that he might be the first-born among many brethren. And those whom he predestined he also called; and those whom he called he also justified; and those whom he justified he also glorified.

Eph. 1:3-12:

Blessed be the God and Father of our Lord Jesus Christ, who has blessed us in Christ with every spiritual blessing in the heavenly places, even as he chose us in him before the foundation of the world, that we should be holy and blameless before him. He destined us in love to be his sons through Jesus Christ, according to the purpose of his will, to the praise of his glorious grace which he freely bestowed on us in the Beloved. [–] For he has made known to us in all wisdom and insight the mystery of his will, according to his purpose which he set forth in Christ as a plan for the fullness of time, to unite all things in him, things in heaven and things on earth. In him, according to the purpose of him who accomplishes all things according to the counsel of his will, we who first hoped in Christ have been destined and appointed to live for the praise of his glory.

things. All this is blatantly in contradiction with God's alleged omnipotence and omnibenevolence: All-powerful and all-good being has both the means and the motive to create and preserve a world that is optimal in every respect, i.e., in Leibniz' memorable words, the *best possible world*.

One of the traditional defences against this sort of *argument from evil* against the existence of God is to hold that God takes the free will of some creatures to be so precious a thing that some evils – which of course are said to arise out of creatures' exercising this capacity of free will and action – must be tolerated. Indeed, the weakest point in the above argument is the assumption that predetermination excludes free will – predetermination and the existence of evil, e.g. sin, being confirmed by the Bible and thus by all theologians must be taken for granted if we are to give a solution to the traditional problem involving God's foreknowledge and predetermination, human free will and responsibility, and the existence of evil at all.

Leaning on Leibniz' views of the matter, I shall take precisely this course: Evil is a product of free will (or at least many evils are), which in turn is *compatible* with predetermination. I shall try to explain (my understanding of) what Leibniz has in mind when he writes in the preface of his *Theodicy* (H 61 / G.6 37) as follows:¹²⁸

I will show that it has been possible for God to permit sin and misery, and even to co-operate therein and promote it, without detriment to his holiness and his supreme goodness, although generally speaking, he could have avoided all those evils.

¹²⁸ Also, at §50 of *Theodicy*, Leibniz promises to show that in some relevant sense "the human soul is altogether its own natural principle in relation to its actions, dependent upon itself and independent of all other creatures."

4.2 Timelessness and the foreknowledge problem

However, let us first look at some traditional solutions to the problematic issue of divine predetermination, especially from the point of view of God's foreknowledge. One approach is to deny the terms of the problem by insisting that it is only due to our temporal perspective that it seems to us that God's omniscience violates human free will. God is outside time, his point of view is eternal (strictly in the sense of timeless) – thus it is a mistake to say that God has *foreknowledge*, for there is no *before* and *after* from this point of view.¹²⁹ Plotinus (204-70), St. Augustine, Boethius, Aquinas, and, more modernly, Spinoza (1632-77) all explicitly distinguish timelessness or atemporality from temporality proper, that is, from omnitemporality (sempiternity).¹³⁰ These

¹²⁹ This is analogous to the view presented in chapter 2 above, according to which it may be said that items that are bearers of truth values, i.e. Fregean Gedanken, are timeless (and also worldless) and it is thus strictly speaking misguided to say, for example, that true Gedanken are true omnitemporally, or in general true-at-a-time (or to say that they are true necessarily, or in general true-in-a-world).

¹³⁰ In *Enneads* 3.7.3 Plotinus holds that eternity is "a Life never varying, not becoming what previously it was not"; "a Life changelessly motionless"; "not this now and now that other, but always all; not existing now in one mode and now in another, but a consummation without part or interval"; a "standing present"; "that which neither has been nor will be, but simply possesses being; that which enjoys stable existence as neither in process of change nor having ever changed".

St. Augustine, *On the Psalm 101*: "For the years of God [--] are the eternity of God: eternity is the very substance of God, which hath nothing changeable; there nothing is past, as if it were no longer: nothing is future, as if it existed not as yet. There is nothing there but, Is: there is not there, Was, and Will be; because what was, is now no longer: and what will be, is not as yet: but whatever is there, simply Is." (See also *Confessions* 11.13.16, and *The City of God* 11.6.)

Boethius, *Consolation of Philosophy* 5.6: "Eternity is the simultaneous and complete possession of infinite life. [--] All that lives under the conditions of time moves through the present from the past to the future [--]. For to pass through unending life, the attribute which Plato [in *Timaeus*] ascribes to the universe is one thing; but it is another thing to grasp simultaneously the whole of unending life in the present; this is plainly a

philosophers might insist that the apparent determinacy of the series of things, arising from a reflection on the attributes of God, is not really determinacy of a series, because *there is no series to begin with* from God's point of view. The determinacy involved is atemporal in nature, and thus, not so serious as it seems at first sight. Temporal terms *do not apply* to a timeless being – it makes no sense to say that an atemporal entity is determinate with respect to time, because there is no time, in our normal human sense of time, to such an entity. Accordingly, for a knower who is atemporal everything is (as it were) present and thus there is no *before* and *after* and thus no *foreknowledge*, *predetermination* or *preordination* either; thus, neither theological determinism nor the lack of free will follows from God's all-embracing knowledge.¹³¹

peculiar property of the mind of God. [--] Since [--] God has a condition of ever-present eternity, His knowledge [--] views in its own direct comprehension everything as though it were taking place in the present. [-- T]he foreknowledge by which God distinguishes all things, [-- is] more rightly [--] a knowledge of a never-failing, constancy in the present, than a foreknowledge of the future. [-- A]ll things [--] are present to Him but future under the conditions of time." In *The Trinity is One God* 4, in turn, Boethius states: "Philosophers say that 'ever' may be applied to the life of the heavens and other immortal bodies. But as applied to God it has a different meaning. He is ever, because 'ever' is with Him a term of present time, and there is this great difference between 'now', which is our present, and the divine present. Our present connotes changing time and sempiternity; God's present, unmoved, and immoveable, connotes eternity."

Spinoza, *Ethics* pt. I, def. 8: "By *eternity*, I mean existence itself, in so far as it is conceived necessarily to follow solely from the definition of that which is eternal. Explanation: Existence of this kind is conceived as an eternal truth, like the essence of a thing, and, therefore, cannot be explained by means of continuance or time, though continuance may be conceived without a beginning or end." Pt. V, prop. 29, scholium: "We conceive things as actual in two ways: either insofar as we conceive them to exist in relation to a certain time and place, or insofar as we conceive them to be contained in God and to follow from the necessity of the divine nature. But things we conceive in this second way as true, or real, we conceive under a species of eternity, and to that extent they involve the eternal and infinite essence of God." See also *ibid.*, prop. 23, scholium.

¹³¹ Similarly, all truths are timeless, and thus there is really no such thing as now-true, or in general, *t*-true, where '*t*' indicates a moment of time. Alethically, there is no such thing as *w*-true, where '*w*' names a possible world, and if necessity is analysed in terms of omniorldness, i.e. by truth in all possible worlds, i.e. by *x*-truth for all worlds *x*, then

Aquinas is explicit in his attempt to get rid of the problem in this way. In *Truth* 2.12c he holds that "it would be impossible for God to have knowledge of future contingents if He knew them as future" because, (i), "a contingent can be known as future by no cognition that excludes all falsity and the possibility of falsity" and, (ii), "there is no falsity or possibility of falsity in the divine knowledge", but, (iii), "[a] contingent can be impeded before it is brought into being; for at that stage it exists only in its causes, which may be prevented from producing their effect"¹³² (i.e. future contingents may, according to Aquinas, turn out to be false).¹³³ St. Thomas continues as follows:¹³⁴

Now, something is known as future when an order of past and future stands between the event and the knowledge. This order, however, cannot be found between the divine knowledge and any contingent thing whatsoever; but the relation of the divine knowledge to anything whatsoever is like that of present to present. [--] Since the vision of divine knowledge is measured by eternity, which is all simultaneous and yet includes the whole of time [--], it follows that God sees whatever happens in time, not as future, but as present. For what is seen by God is, indeed, future to some other thing which it follows in time; to the divine vision, however, which is not in time but outside time, it is not future but present. [--] God infallibly knows all the contingents, whether they are present, past, or future to us; for they are not future to Him, but He knows that they are when they are; and the fact of his knowing them does not prevent them from happening contingently. The difficulty in this matter arises from the fact that we can describe the divine knowledge only after the manner of our own, at the same time pointing out the temporal differences.

In *Summa Contra Gentiles* 1.67.7 we find even more clearly the contention

strictly speaking no truth or falsehood, not even mathematical ones, are necessary. Just as God is timeless and of course also worldless, verities and falsities are timeless and worldless as well. In short, all truths are simple and plain, outside time and possible worlds.

¹³² "After a contingent has been brought into existence, however, it can no longer be prevented" (*ibid.*).

¹³³ Cf. here what I said about the ancient Greek conception of knowledge (and objects of knowledge) in section 2.9 above.

¹³⁴ See also *ibid.*, ad 7, and *Summa Theologica* 1.14.13c.

that the question whether some event that will happen might fail to happen cannot really be raised (my emphasis):¹³⁵

When it is said, 'God knows, or knew, this coming event,' an intervening medium is supposed between the divine knowledge and the thing known, to wit, the time to which the utterance points, in respect to which that which is said to be known by God is in the future. But really it is not in the future in respect of the divine knowledge, which existing in the instant of eternity is present to all things. In respect of such knowledge, if we set aside the time of speaking, it is impossible to say that so-and-so is known as non-existent; and the question never arises as to whether the thing possibly may never occur. As thus known, it should be said to be seen by God as already present in its existence. *Under this aspect, the question of the possibility of the thing never coming to be can no longer be raised: what already is, in respect of that present instant cannot but be.* The fallacy then arises from this, that the time at which we speak, when we say 'God knows,' co-exists with eternity; or again the last time that is marked when we say 'God knew'; and thus a relation of time, past or present, to future is attributed to eternity, which attribution does not hold [--].

This appeal to God's timelessness, it must be said, is not entirely convincing as an attempt to shake off the (alleged) problem. For the straightforward answer to the claim that there is no problem of divine foreknowledge because there is no divine *fore*knowledge to begin with, is that what *we* call divine foreknowledge is indeed God's "simple", timeless knowledge, which from *our* temporal point of view concerns what is in the future. God knows what lies in the future under our temporal aspect – let us thus call it foreknowledge (it may be called knowledge, without *fore-*, just as well). The appeal to the inappropriateness of the prefix "fore" is only a kind of nominal trick that does not solve the problem.

¹³⁵ Cf. my dissolution of Aristotle's sea-battle argument above.

4.3 Scope distinction as a solution

Another strategy, employed by Boethius, Aquinas and others, of avoiding the determination problem apparently arising from God's foreknowledge is to make a *scope distinction* in the statements such as,

(41) Whatever is known by God is necessary.

For this statement allows two readings, according to the scope of the necessity operator. For – applying (41) to what will happen in the future – (41) may mean, first,

(42) Necessarily, if God knows that something will be, it will be

(this may be formalized as $N(Kp \rightarrow p)$, where 'N' represents "Necessarily" and 'K' "God knows that"), and secondly, (41) may mean,

(43) If God knows that something will be, it necessarily will be

(or, $Kp \rightarrow Np$). Here, (42) is unproblematically true (or so it is held), while (43) is false; note that taken together with the assumed principle of God's foreknowledge,

(44) Whatever will be, God knows that it will be

(or, $p \rightarrow Kp$), (43) – but not (42) – implies the repugnant conclusion,

(45) Whatever will be, necessarily will be

(or, $p \rightarrow Np$).¹³⁶ Boethius, Aquinas and others now suggest that those who see a problem in God's foreknowledge confuse these readings (42) and (43) – that they confuse *conditional necessity* or *necessitas consequentis* or *hypothetical necessity* (42) with *simple necessity* or *necessitas consequentiae* or *absolute necessity* (43); or, in terms of Aristotle's distinction between the "composite" and the "divided", Boethius and Aquinas appeal to the difference between the composite reading (42) and the divided reading (43) of (41).¹³⁷

In *Consolation of Philosophy* 5.6, Boethius appeals to this Aristotelian distinction in the following manner:

[You hold] that what God sees about to happen, cannot but happen, and that what cannot but happen is bound by necessity [--. However,] there are two kinds of necessities; one is simple: for instance, a necessary fact, "all men are mortal"; the other is conditional; for instance, if you know that a man is walking, he must be walking: for what each man knows cannot be otherwise than it is known to be; but the conditional one is by no means followed by this simple and direct necessity; for there is no necessity to compel a voluntary walker to proceed, though it is necessary that, if he walks, he should be proceeding. In the same way, if Providence sees an event in its present, that thing must be, though it has no necessity of its own nature.

Aquinas, in turn, openly utilizes the Aristotelian distinction in *Summa Contra Gentiles* (1.67.8) and *Summa Theologica* (1.14.13 ad 3)¹³⁸ in the following

¹³⁶ Under the approach I utilized in chapter 2, the most natural formalization of (42) is,

$$\forall x(Kp^x \rightarrow p^x),$$

of (43),

$$\forall x(Kp^\alpha \rightarrow p^x)$$

– which is of course equivalent with $Kp^\alpha \rightarrow \forall xp^x$ – of (44),

$$p^\alpha \rightarrow Kp^\alpha,$$

and of (45),

$$p^\alpha \rightarrow \forall xp^x.$$

(Cf. section 4.7 below.)

¹³⁷ Cf. e.g. Knuuttila 1981 (esp. 171-6, 187-95, 213-4), Mondadori 1991 (391).

¹³⁸ And also in *Truth* 2.12 ad 4.

manner:

Since everything is known by God as seen by Him in the present, the necessity of that being true which God knows is like the necessity of Socrates's sitting from the fact of his being seen seated. This is not necessary absolutely, 'by necessity of the consequent,' as the phrase is, but conditionally, or 'by necessity of the consequence.' For this conditional proposition is necessary: 'He is sitting, if he is seen seated.' Change the conditional proposition into a categorical of this form: 'What is seen sitting, is necessarily seated': it is clear that the proposition is true as a phrase, where its elements are taken together [*compositam*], but false as a fact, when its elements are separated [*divisam*]. All these objections against the divine knowledge of contingent facts are *fallacia compositionis et divisionis*.

[The] proposition, "Everything known by God must necessarily be," [--] may refer to the thing, or to the saying. If it refers to the thing, it is divided and false; for the sense is, "Everything which God knows is necessary." If understood of the saying, it is composite and true; for the sense is, "This proposition, 'that which is known by God is' is necessary."

However, there is a problem with this solution based on the distinction between composite and divided senses of statements concerning foreknowledge and necessity – a problem that is also acknowledged by Aquinas: From the following three principles, accepted by Aquinas,

Necessarily, if God has always known that something will be, it will be [i.e. $N(Kp \rightarrow p)$],

Whatever necessarily follows from what necessarily will be, necessarily will be [$N(p \rightarrow q) \& Np \rightarrow Nq$]

If God has always known that something will be, this is so of necessity [$Kp \rightarrow NKp$],¹³⁹

we can deduce the divided statement

¹³⁹ This premise is justified by "the necessity of the past" (cf. the previous chapter), i.e. by God's past knowledge.

If God has always known that something will be, it necessarily will be $[Kp \rightarrow Np]$,

which, as noticed above, with the assumed

God has always known whatever will be $[p \rightarrow Kp]$

yields the offending

Whatever will be, necessarily will be $[p \rightarrow Np]$.

On the final analysis, Aquinas, with the assumptions he is committed to,¹⁴⁰ is left only with the appeal to God's timelessness – and he in fact admits this at *Truth* 2.12 ad 7 as well as at *Summa Theologica* 1.14.13 ad 2. As I said above, I think this is not a particularly tenable solution.¹⁴¹

It is not entirely clear what exactly Boethius, Aquinas and other Aristotelians (including Aristotle himself) meant by modal terms such as *necessitas*. I shall therefore refrain from considering further their attempts to avoid the problems (allegedly) arising from the assumed foreknowledge of God. Instead, I shall turn to G.W. Leibniz (1646-1716), who, having a relatively clear notion of modal terms, repeatedly discusses the relations between God's providence and foreknowledge, predetermination and necessity, human freedom and responsibility, and sin and evil – and he also appears to employ traditional approaches to these matters, for instance the distinction between absolute and hypothetical necessity. However, before going into Leibniz' approach to these

¹⁴⁰ As we shall see below (in section 4.7), the argument just presented is not sound. (The suspect premise is, of course, the third one: If God has always known that something will be, this is so of necessity.)

¹⁴¹ For Ockham's attempt to resolve the (apparent) inconsistency between God's foreknowledge and human free will, see Ockham 1320-3; and cf. Plantinga 1986, Hasker 1989 (12-5) and Mondadori 1991 (391).

traditional theological questions, I shall, in the next section, give an outline of the relevant parts of Leibniz' metaphysics.

4.4 Leibniz' complete individual concepts

That the individual a has the property F at the moment of time t in the possible world w is represented in the notation of my Fregean approach in chapter 2 by

$$F^{wt}(a).$$

Abstracting from the property, the time and the possible world, we get the unequal-level Begriff

$$\Psi^{\xi\zeta}(a),$$

or, a has Ψ in ξ at ζ . This, I think, may be viewed as corresponding to Leibniz' notorious *complete individual concept*. Leibniz explains his notion of a complete or perfect individual concept as follows (DM §13 (1686), LA 131 (1687), Mon. §56 (1714)):¹⁴²

¹⁴² See also e.g.
 DM §§ 8-9, 14, 33
 LA 12, 20, 23, 41-4, 46, 51, 53, 56-7, 136
 PM 78 (G.7 311; c. 1686)
 PM 96 (C 19; c. 1686)
 WF 52 (G.1 382-3; 1686)
 PM 123 (G.4 485; 1695)
 L 576 (G.4 557; 1702)
 WF 135n12 (G.3 383, 1706)
 Theod. §§ 360, 403
 Mon. §§ 22, 59, 61-2, 65, 83
 PNG §§ 3, 13-4.

It is almost as if Leibniz' initial point of view is the same as that of some Stoics (with an appropriate update of terminology, e.g. "God's creation" instead of "primary fire"),

The individual concept of each person includes once for all everything which can ever happen to him [--]. Everything which is to happen to anyone is already virtually included in his nature or concept [--]. Since Julius Caesar will become perpetual Dictator and master of the Republic [--], this action is contained in his concept [--].

Every thing (whether genus, species or individual) has a complete concept, according to which God, who conceives of everything perfectly, conceives of it, that is to say a concept which contains or includes everything that can be said of the thing [--]. God can form such an individual concept of Adam or Alexander, which includes all the attributes, affections, accidents and in general all the predicates of this subject.

Now this connexion or adaptation of all created things to each and of each to all, means that each simple substance has relations which express all the others, and, consequently, that it is a perpetual living mirror of the universe.

I think Leibniz' idea of "complete individual concepts" is sounder than it might seem at first sight – indeed, what I presented in chapter 2, from a Fregean point of view, can be seen as a clarification of Leibniz' account. Consider for instance the following passages in LA 42-3, 53:

Suppose a straight line ABC representing a certain length of time. And suppose a certain individual substance, for instance me, existing or surviving during that length of time. [--] Since then one supposes that it is the same individual substance continuing to exist, or that it is I who exist in the time AB and am then in Paris, and that it is also I who exist in the time BC and am then in Germany, there must of necessity be a reason for the true statement that we continue to exist, that is to say that I who was in Paris is now in Germany. For if there is no reason, one would be as justified in saying that it is another person. [--] Now, it is impossible to find another identity, except that my attributes of the preceding time and state as well as those of the following time and state are predicates of one and the same subject, they are present in the same subject. [--] Seeing that since

for according to Eusebius of Caesarea's (c. 263-340 AD) *Praeparatio Evangelica* 15.14.2, Aristocles of Lampsacus wrote as follows: "And the primary fire is like a kind of seed, containing the rational principles and cause of all things and events, past, present, and future. And the interconnection and sequence of these things is fate and knowledge and truth and an inescapable and inevitable law of what exists. Thus, all things in the cosmos are organized extremely well, as in a well-managed government" (from Inwood & Gerson 1988, 124-5; van Arnim 1905, 1.98).

the beginning of my existence it could truly be said of me that this or that would happen to me, one must admit that these predicates were laws contained in the subject or in the complete concept of me which makes what is called myself, which is the basis of the connexion between all my different states and of which God had perfect knowledge from all eternity.

There must be an *a priori* reason (independent of my experience) which makes one say truly that it is I who was in Paris and that it is still I, and not another, who am now in Germany, and consequently the concept of myself must link or include the different states. Otherwise, one might say that it is not the same individual, although it appears to be. And indeed certain philosophers who were not well enough acquainted with the nature of substance and of individual entities or entities *per se* have thought that nothing remained truly the same.

It seems to me that Leibniz is here saying some things I have put forward above. For example, Leibniz is bothered with the question of identity through time. It must be one and the same Leibniz, with all his properties, that is in Paris between *A* and *B*, e.g. at *t*, and is not in Paris between *B* and *C*, e.g. at *s* (viewing the matter, as Leibniz does, only temporally); that is to say, Leibniz is both $P^t(\xi)$ and $\sim P^s(\xi)$, i.e. has both *being in Paris at t* and *not being in Paris at s*, while staying as the same. Cf. here what Leibniz writes in Grua 323 (c. 1685?; translated in Sleight 1990, 129):¹⁴³

A thing can remain the same even if it changes, if it follows from its own nature that numerically the same thing must have successive diverse states. Certainly, I am said to be the same who existed before, because my substance involves all my states, past, present, and future.

By means of possible worlds, Leibniz is able to give a clear analysis of alethic (modal) concepts of necessity, possibility and contingency: Necessary truth means truth in every possible world, possible truth truth in some worlds and contingency truth in some worlds combined with falsehood in others. In numerous places, however, Leibniz depicts necessary truth as a "truth the

¹⁴³ The following passage in LA 49 quite clearly points at time-indexed properties (utilized in chapter 2 above): "the concepts of individual substances [--] are complete and capable of wholly characterizing their subject, and consequently [--] embrace truths of contingency or of fact, and the individual circumstances of the time, the place, etc. [--]."

opposite of which is contradictory" (or implies a contradiction).¹⁴⁴ R.C. Sleigh (1990, 51), has claimed that Leibniz' "primary characterization of modality [--] was not based on a structure of possible worlds", but on the just mentioned portrayal involving contradiction. However, I think it is evident that Leibniz at least intends these characterizations to amount to the same. Otherwise, he would, e.g. in the *Discourse*, intentionally create an ambiguity with respect to alethic notions, which would be very bad philosophizing because a reader would be quite at a loss which notion is meant when the word *necessité* is used (in all those cases, e.g. in DM and LA, when this word occurs without an explicit explanation). Secondly, in "Necessary and Contingent Truths" (c. 1686; PM 96-105 / C 16-24) Leibniz first defines necessity by means of contradiction of opposition (PM 96) and then – obviously intending this to be an equivalent account – by saying that eternal (necessary) truths are those which "would have held even if God had created the world in another way" (PM 98).

According to Leibniz, God "conceives in his understanding" all logically, i.e. metaphysically possible world histories or *plans*, of which he decides to actualize one, namely, the one that is, all things considered, the best possible world (or plan),¹⁴⁵ "there was an infinite number of possible ways of creating

¹⁴⁴ E.g.

DM §13

P 64 (C 374; 1686)

PM 96 (C 17; c. 1686)

PM 108, 111 (FC 181, 185; c. 1689)

Theod. §20 of the *Preliminary Dissertation*, §§ 37, 282, Summary (H 382 / G.6 381), and elsewhere.

¹⁴⁵ The notion of Divine Plan, utilized in the scholastic philosophy well before Leibniz' time, probably derives from the following passage from Boethius' *Consolation* 4.6 (I quote here at length because this passage is extremely important in its own right: It forges a link between Plato's and Aristotle's "Form in a craftsman's mind", the Hellenistic conception of Fate and the Christian notion of the Providential Plan in God's mind):

The engendering of all things, the whole advance of all changing natures, and every motion and progress in the world, draw their causes, their order, and their forms from the allotment of the

the world according to the different plans God could form" (LA 51).¹⁴⁶ Leibniz writes (Theod. §225, Mon. §53):¹⁴⁷

The wisdom of God, not content with embracing all the possibles, penetrates them, compares them, weighs them one against the other, to estimate their degrees of perfection or imperfection, the strong and the weak, the good and the evil. [-] By this means the divine wisdom distributes all the possibles it had already contemplated separately, into so many universal systems which it further compares the one with the other. The result of all these comparisons and deliberations is the choice of the best from among all these possible systems, which wisdom makes in order to satisfy goodness completely; and such is precisely the plan of the universe as it is. Moreover, all these operations of the divine understanding, although they have among them an order and a priority of

unchanging mind of God, which lays manifold restrictions on all action [-]. Such restrictions are called Providence when they can be seen to lie in the very simplicity of divine understanding; but they were called Fate in old times when they were viewed with reference to the objects which they moved or arranged. [-] Providence is the very divine reason which arranges all things [-]; while Fate is that ordering which is a part of all changeable things, and by means of which Providence binds all things together in their own order. Providence embraces all things [-]; when they are assigned to their own places, forms, and times, Fate sets them in an orderly motion; so that this development of the temporal order, unified in the intelligence of the mind of God, is Providence. The working of this unified development in time is called Fate. [-] Just as when a craftsman perceives in his mind the form of the object he would make, he sets his working power in motion, and brings through the order of time that which he had seen directly and ready present to his mind. So by Providence does God dispose all that is to be done, each thing by itself and unchangeably; while these same things which Providence has arranged are worked out by Fate in many ways and in time. Whether, therefore, Fate works by the aid of the divine spirits which serve Providence, or whether it works by the aid of the soul, or of all nature, or the motions of the stars in heaven, or the powers of angels, or the manifold skill of other spirits, whether the course of Fate is bound together by any or all of these, one thing is certain, namely that Providence is the one unchangeable direct power which gives form to all things which are to come to pass, while Fate is the changing bond, the temporal order of those things which are arranged to come to pass by the direct disposition of God.

¹⁴⁶ LA 51 reads more fully as follows: "I conceive that there was an infinite number of possible ways of creating the world according to the different plans God could form, and that each possible world depends [-] upon certain primitive decrees (conceived *sub ratione possibilitatis*) or laws of general order of that possible universe, to which they are suited and whose concept they determine, as well as the concepts of all the individual substances that must enter into this same universe."

¹⁴⁷ See also e.g.

DM §5

LA 19

Theod. §§ 8, 10, 78, 84, 167, 196, 335, 414-6

Mon. §§54-5.

nature, always take place together, no priority of time existing among them.

Now, as in the Ideas of God there is an infinite number of possible universes, and as only one of them can be actual, there must be a sufficient reason for the choice of God, which leads Him to decide upon one rather than another.¹⁴⁸

In opposition to Sleigh's opinion, I think the following should be regarded as equivalent:¹⁴⁹

Necessarily, Adam is human.

The assumption that Adam is not human is contradictory.

That Adam is not human is not true in any possible world.

In every possible world (in which Adam exists), Adam is human (at the time he exists).

¹⁴⁸ By a *fiat*, God actualizes (i.e. makes existent) a definite world "appearing" in his ideas, viz. the actual world, including everything in that world, e.g. Adam. Now, if existence is assumed to be a "real predicate", which I take to mean that it makes some *difference* or other, an oddity results: Strictly speaking God does not create *anything* he has an idea of, for under the assumption just mentioned, Adam as a mere possibility (i.e. as a mere idea in God's mind) is not the same as the created Adam, for only the latter has (or had, if you like) this distinction of existing. (Perhaps this is one way of putting Kant's point to the effect that "existence is not a real predicate" in *Critique of Pure Reason* A 592f. / B 620f.)

¹⁴⁹ Leibniz advocates traditional "species essentialism" – it is logically (i.e. metaphysically) true, for instance, that Adam is human. This is confirmed e.g. in Grua 311 (c. 1685?; translated in Sleigh 64-5): "In [the] complete concept of possible Peter, which [--] is observed by God, are contained not only essential or necessary items, namely, those that flow from an incomplete or species concept, and are demonstrated from terms so that the contrary implies a contradiction, but also existential things, so to speak, or contingent items are included there, because it is of the nature of an individual substance that its concept is perfect or complete."

$$\forall xy(E^{xy}(a) \rightarrow H^{xy}(a)).^{150}$$

There is, however, a major difficulty with Leibniz' analysis of necessity, possibility and contingency: Leibniz is committed to *worldbound individuals* (or worldbound substances), i.e. to the view that complete individual concepts are complete *within* a possible world (which amounts to the view that they are temporally complete). The following passages make this quite clear (Grua 327 (1689?; translated in Adams 1994, 56); DM §30; LA 42, 52-3; Theod. §414):

You will insist that you can complain, why did God not give you more strength [to resist temptation]. I reply: if he had done that, you would not be, for he would have produced not you but another creature.

[S]omeone [--] may say, how does it come about that this man will certainly commit this sin? The reply is easy; it is that otherwise he would not be this man.

[A person] would not have been our Adam, but another, if he had experienced other events, for nothing prevents us from saying that he would be another. He is therefore another. It seems clear to us that this square of marble brought from Genoa would have been exactly the same even if it had been left there, because our senses permit us to make only superficial judgements, but fundamentally, because of the connexions between things the whole universe with all its parts would be quite different and would have been another universe from the beginning if the least thing were to happen other than it does. This does not mean that events are necessary, but the fact is that they are certain from the time God has made his choice of this possible universe.

Since it is certain that I shall take [a journey to Paris], there must indeed be some connection between me and [--] the journey. [--] A falsity would therefore exist if I did not take it, which would destroy the individual or complete concept of me. [--] Whoever will not take this journey is not me. [--] If in the life of some person and even in this entire universe something were to proceed in a different way from what it does, nothing would prevent us saying that it would be another person or another possible universe that God would have chosen. It would thus truly be another individual.

[Possible] worlds are all [-- in God's] ideas. [-- In some one can find] not absolutely the same Sextus as you have seen (that is not possible, he carries with

¹⁵⁰ Here, of course, I employ my notation, not Leibniz'.

him always that which he shall be) but several Sextuses resembling him, possessing all that you know already of the true Sextus, but not all that is already in him imperceptibly, nor in consequence all that shall yet happen to him.¹⁵¹

I think Leibniz makes a mistake here. For what Leibniz appears to be saying in these passages is that distinct objects (substances) inhabit distinct worlds, that no actual object can be found in any other possible world. There is an obvious problem with this: If this is so, one cannot say, in the manner Leibniz suggests, that something else could have happened to (say) *Adam* from what actually did happen to him (that is, if God had chosen some different possible world), because *Adam*, *that very person*, appears only in this chosen world of ours. This destroys the explanation, "it is not necessary that *Adam*, say, eats the apple at *t*, because in an alternative world *Adam* does not do so" – for *Adam* does not inhabit any alternative worlds. Thus, Leibniz' explanation of necessity, possibility and contingency in terms of possible worlds fails.

The reason behind Leibniz' advocacy of a theory of worldbound individuals is, I think, the principle of indiscernibility of identicals (IndId):¹⁵² If something true of *a* is not true of *b*, then *a* is not the same as *b*. Our actual *Adam* is the only person "satisfying" all concepts contained in a certain complete individual concept, viz. the complete individual concept of *Adam*. Take then some other possible world, *w*. It cannot, by identity of indiscernibles – i.e. the principle that if *a* is not the same as *b*, then something true of *a* is not true of *b* – differ only numerically from the actual world. Accordingly, since every complete individual concept contains a world in its totality, *Adam*'s complete individual concept cannot "be a part" of (or a "mirror" of) this other world *w*. From this, generalized, Leibniz concludes – apparently correctly, by (IndId), but in my opinion somewhat thoughtlessly – that no object (substance) can exist but in

¹⁵¹ As has often been pointed out, some of these formulations bring to mind David Lewis' "counterpart" account of transworld "identity" (see Lewis 1968, 1973, 1986). I ignore the suggestion that Leibniz is such a counterpart theorist. (However, *technically* this idea is not very far from the notion of "supercomplete individual concepts" I shall introduce below.)

¹⁵² Cf. section 2.12 above.

a single possible world.¹⁵³ But surely, this is highly implausible, for since God "has in his mind" all logically (i.e. metaphysically) possible histories or plans, it should be allowed that numerically the same object is part of several histories, that is, numerically the same object is involved in various alternative plans of God.

The solution – or, I venture to say, a correction – is readily at hand: We must resort to, not only time-indexed but also world-indexed concepts.¹⁵⁴ In a *supercomplete* individual concept of Adam there is contained, not only everything in the actual world (i.e. the whole actual history), but also everything in every possible history as well ("because of the connections between things"). The whole *universe* of possible worlds, i.e. the totality of them,¹⁵⁵ is contained in Adam's, as well as in any other substance's, supercomplete individual concept. That is, the supercomplete individual concept of (e.g.) Adam contains items such as the following:

$$F^{at}(\xi),$$

$$\sim F^{as}(\xi), s \neq t,$$

$$\sim F^{wt}(\xi), w \neq \alpha.$$

That Adam is an F in α at t and a non- F in w at t does not violate (IndId) because the complement concept of F^{at} is $\sim F^{at}$, not $\sim F^{wt}$.¹⁵⁶ It is numerically the same Adam that actually eats the apple (at t) but could have rejected it (at that time):

¹⁵³ Or rather, subsist *sub ratione possibilitatis* but in a single possible world.

¹⁵⁴ Cf. Plantinga 1970 (pp. 486f.), Mates 1972 (esp. p. 109).

¹⁵⁵ I call the totality of possible worlds the *universe of worlds*. This is not to be confused with Leibniz' often calling a particular world – usually the actual world – *univers*.

¹⁵⁶ Here, of course, I am repeating the point I made over and over again in chapter 2.

$$E^{at}(a) \ \& \ \exists x \sim E^{xt}(a).$$

It is perhaps objected that even if temporally complete individual concept made some sense – an object may be e.g. *t*-bald and *s*-nonbald, where '*t*' and '*s*' indicate distinct moments of time – the alethic extension is unacceptable. My reply to this is as follows: To say that an object *a* is, say, *w*-bald (at a fixed moment of time), where '*w*' indicates a possible world different from the actual world α , is only to say that if *w* were the case, then *a* would be bald. In my opinion it is not too implausible to view objects as being partly "determined" by the way they would be in various alternative circumstances or possible worlds.¹⁵⁷

In conclusion of this section, let us review – as a kind of authoritative illustration of supercompleteness – the passage from the Bible that is traditionally taken up in connection with *middle knowledge*, i.e. God's knowledge of counterfactuals, i.e. of those possibilities that remain as mere possibilities.¹⁵⁸ In the first book of Samuel, 23:7-13, we find (RSV):¹⁵⁹

Now it was told Saul that David had come to Kei'lah. And Saul said, "God has given him into my hand; for he has shut himself in by entering a town that has gates and bars." And Saul summoned all the people to war, to go down to Kei'lah, to besiege David and his men. David knew that Saul was plotting evil against him

¹⁵⁷ Cf. "If the world were such that Kofi Annan were bald, then Kofi Annan would be bald" – is this not wholly natural?

¹⁵⁸ The theory of middle knowledge (*scientia media*) was developed by sixteenth-century Iberian theologians Luis de Molina (1535-1600) and Pedro da Fonseca (1528-99) as an attempt to reconcile God's providence (and omniscience and grace) with human free will. According to Leibniz, middle knowledge is God's knowledge *de futuris sub conditione* (CD §17), or more generally, I take it, thorough knowledge of all possible plans. See e.g. de Molina 1588, Flint 1998, Wierenga 1989 (ch. 5). Leibniz alludes to this theory of middle knowledge at least in C 25-7 (1677); DM §31; LA 14, 25, 103; PM 96, 103 (C 17, 22; c. 1686); AG 100n (C 3, c. 1687?); PM 111 (FC 184, c. 1689); Grua 347f. (c. 1695); Theod. §§39f.; CD §17 (G.6 441).

¹⁵⁹ Leibniz explicitly considers this passage in Theod. §§40-2.

[--]. Then said David, "O Lord, the God of Israel, thy servant has surely heard that Saul seeks to come to Kei'lah, to destroy the city on my account. Will the men of Kei'lah surrender me into his hand? Will Saul come down, as thy servant has heard? O Lord, the God of Israel, I beseech thee, tell thy servant." And the Lord said, "He will come down." Then said David, "Will the men of Kei'lah surrender me and my men into the hand of Saul?" And the Lord said, "They will surrender you." Then David and his men, who were about six hundred, arose and departed from Kei'lah, and they went wherever they could go. When Saul was told that David had escaped from Kei'lah, he gave up the expedition.¹⁶⁰

God knows that Saul attacks Kei'lah (at t). Thus, this is true! But, since this attack never takes place, how can this be? The answer is, of course, that although it is actually false – $\sim A^{act}(s)$ – and indeed the attack never actually happens – $\forall x \sim A^{ax}(s)$ – there is at least one possible world (God's plan) such that Saul attacks Kei'lah at t in that world – $\exists x A^{xt}(s)$ – or, if w is such a world, Saul attacks Kei'lah in w at t – $A^{wt}(s)$. All these truths known to God are *plain* truths, i.e. not truths-in-a-world but simple, worldless truths (cf. chapter 2 above).¹⁶¹

4.5 Leibniz on absolute and hypothetical necessity

¹⁶⁰ Christ also has this power of knowing "unactualized truths", of course (Matt. 11:20-3, RSV):

Then he [Christ] began to upbraid the cities where most of his mighty works had been done, because they did not repent. "Woe to you, Chora'zin! woe to you, Beth-sa'ida! for if the mighty works done in you had been done in Tyre and Sidon, they would have repented long ago in sackcloth and ashes. But I tell you, it shall be more tolerable on the day of judgment for Tyre and Sidon than for you. And you, Caperna-um, will you be exalted to heaven? You shall be brought down to Hades. For if the mighty works done in you had been done in Sodom, it would have remained until this day."

¹⁶¹ Cf. here Aquinas, *Truth* 2.12 ad 9: "There is no difficulty in affirming that God knows something as future which will not take place, inasmuch as he knows that certain causes are inclined toward a certain effect which [however] will not be produced."

It is tempting to interpret this by means of possible worlds as follows: God knows that a certain future event would happen were it not impeded, or, in other words, God knows that in many worlds, considered *sub ratione possibilitatis*, that lack (relevant) impediments, the future event in question does happen.

As I have already said, it is not uncontroversial what Aristotle, Boethius and Aquinas (and other followers of Aristotle) meant by words like *anagke* and *necessitas* – although I argued above that in his discussion of future contingents Aristotle is attending to unalterability (and not to necessity as modernly conceived).¹⁶² This makes it hard to evaluate their solution based on the distinction between simple and conditional necessity (i.e. between *necessitas consequentiae* and *necessitas consequentis*). In contrast, Leibniz' notion of alethic modalities, given in terms of possible worlds, is relatively clear (after the emendation involving supercompleteness). Let us thus consider Leibniz' views of God's providence (including foreknowledge) and free will.

Leibniz' solution to the problems arising from God's all-embracing providence is that although everything happens, after God has made his choice of actualizing this world of ours, of *certainty*, it is not the case that everything happens of *necessity*, for had God chosen some other world, many things would have been different. Leibniz gives this solution in DM §13 as follows:

But does it not seem that [-- with the introduction of complete individual concepts] the difference between contingent and necessary truths will be destroyed, that there will be no place for human liberty, and that an absolute fatality will rule as well over all our actions as over all the rest of the events of the world? To this I reply that a distinction must be made between that which is certain and that which is necessary. Every one grants that future contingencies are assured since God foresees them, but we do not say just because of that they are necessary. [--] The connection or sequence is of two kinds; the one, absolutely necessary, whose contrary implies contradiction, occurs in the eternal verities like the truths of geometry; the other is necessity only *ex hypothesi*, and so to speak by accident, and in itself it is contingent since the contrary is not implied. [--] That which

¹⁶² See Knuuttila 1981 for an extensive treatment of the hypothesis that Aristotle and medieval Aristotelian philosophers generally meant the statistical interpretation of necessity. Knuuttila (1987, 212-7; 1981, 218f.) and Alanen & Knuuttila (1988, 24f.) suggest that at least Gilbert of Poitiers (1080-1154) and John Duns Scotus (1265-1308) are exceptions to this trend. The following passage in *A Treatise on God as First Principle* 4.18 perhaps exemplifies Scotus' nonstatistical conception of alethic modalities: "I do not call everything contingent which is not necessary and which was not always in existence, but only that whose opposite could have occurred at the time that this actually did".

happens [--] is assured, but [--] it is not therefore necessary, and if anyone did the contrary, he would not do nothing impossible in itself, although it is impossible *ex hypothesi* [i.e. since God *did* choose this world] that other happen. [--] Every truth [that is not absolutely necessary --] is contingent, although certain; [--] and [--] although God assuredly chooses the best, this does not prevent that which is less perfect from being possible in itself. Although it will never happen, it is not its impossibility but its imperfection which causes him to reject it.

In LA Leibniz tells us that many actual events are not necessary "but the fact is that they are certain from the time God has made his choice of this possible universe" (LA 42), and also, in LA 46, that

every necessary or contingent predicate, past, present and future, is included in the concept of the subject [--]. I imagine that M. Arnauld has been reluctant to concede this proposition only because he has considered that the connexion which I support is intrinsic and at the same time necessary, whereas I consider it intrinsic but not at all necessary. [-- R]easons for contingent truths incline without necessitating. It is therefore true that I would be able not to take this journey, but it is certain that I shall.¹⁶³

Some quarter of a century later, Leibniz still holds this view, for he writes, in Theod. §37, as follows:¹⁶⁴

[M]any have held [the foreknowledge of God] to be contrary to freedom. They say

¹⁶³ In 1690 Leibniz appeals in this issue to authorities in the following manner: "infallible certainty is different from absolute necessity, as St. Augustine, St. Thomas, and other learned men have known for a long time" (AG 102 / FC 319).

¹⁶⁴ Leibniz writes about this matter e.g. in the following places as well:
PM 136-7 (G.7 302-3, 1697):

[Every state of the world] is somehow copied from the preceding one (although according to certain laws of change) [--. I]n the series of changing things [-- the reason for events is] the prevailing of inclinations, in a sphere where reasons do not necessitate (by an absolute or metaphysical necessity, in which contrary implies a contradiction), but incline. [-- T]he present world is necessary physically or hypothetically, but not absolutely or metaphysically. In other words, granted that it is once such and such, it follows that such and such things will come into being.

NE 178 (1704):

If by "necessity" we understood a man's being inevitably determined, as could be foreseen by a perfect mind provided with a complete knowledge of everything going on outside and inside that man, then, since thoughts are as determined as the movements which they represent, it is certain that every free act would be necessary.

that what is foreseen cannot fail to exist and they say so truly; but it follows not that what is foreseen is necessary, for *necessary truth* is that whereof the contrary is impossible or implies contradiction. Now this truth which states that I shall write tomorrow is not of that nature, it is not necessary. Yet supposing that God foresees it, it is necessary that it come to pass; that is, the consequence is necessary, namely, that it exist, since it has been foreseen; for God is infallible. This is what is termed a *hypothetical necessity*. But our concern is not this necessity: it is an *absolute necessity* that is required, to be able to say that an action is necessary, that it is not contingent, that it is not the effect of a free choice.

At Theod. §§ 280, 282, in turn, appears the following:

Speaking generally, it appears [--] fitting to say that obedience to God's precepts is always *possible*, even for the unregenerate; that the grace of God is always *resistible*, even in those most holy, and that *freedom* is exempt not only from *constraint* but also from *necessity* [cf. Theod. Pref. (H 61 / G.6 37)], although it be never without infallible *certainty* or without inclining *determination*. It is [--] imperative to understand fully some distinctions, such as that I have very often urged between the necessary and the certain, and between metaphysical necessity and moral necessity. [--] It may be said in a certain sense that it is necessary that the blessed should not sin; [-- and] that God himself should choose the best [--]. But this necessity is not opposed to contingency; it is not of the kind called logical, geometrical or metaphysical whose opposite implies contradiction.

We observe that by this distinction between absolute and hypothetical necessity Leibniz follows Boethius and Aquinas, at least *nominally*. Now, is this distinction Leibniz' ultimate solution to the theological problem of free will, and that of evil, arising from God's providential government? Some present-day writers seem to think so, e.g. Mates 1986 (esp. 119) and Sleight 1990 (esp. 80). I think this is not a solution to the problem in question – indeed, it seems to me that this appeal to the distinction between absolute and hypothetical necessity, as it is utilized in these passages by Leibniz, is beside the point as a solution to the problem of free will.

It is important to discern necessity in Leibniz' sense involving possible worlds from "necessity" in the sense of *actual determination*, which is the sense I think it is traditionally used in most cases. It might even be said that Leibniz *redefines* the word *necessitas* and then gives a solution to the apparent

incompatibility between "necessity" (in his sense) and free will. However, if by the expression *necessitas* (and its cognates) something else, e.g. actual determination, is traditionally meant, then Leibniz, by redefining a central term, obviously does not give a solution the problem as it is traditionally conceived, e.g. by Aristotle in his sea-battle argument and Diodorus Cronus (4th c. BC) in his famous Master Argument (presented in section 3.3 above) and the Stoics in their talk about "fate". In Theod. §§169-73 Leibniz maintains, revealingly, that many past philosophers¹⁶⁵ who have held that, or presented various arguments to the effect that, whatever is (or has been or will be) is necessary, have generally confused hypothetical necessity with absolute. I think this is not the case – the truth is rather that those past characters just meant actual predetermination or actual unalterability by words like *necessitas*. I think many of those past philosophers Leibniz accuses of confusion probably would not even have accepted the notion of other possible worlds (or the notion of necessity as defined as omnimodality) – if this is so, it is *a fortiori* the case that the problem they are dealing with is actual determination or inevitability of events.

In any case, in the notation I have utilized in this essay, Leibniz' solution based on the distinction between absolute and hypothetical necessity – a solution that is at least nominally something like that of Boethius' and Aquinas' – is the following: Let us consider the truth of

$$(46) \quad F^{\xi t}(a)$$

for various "saturations" (or valuations for ' ξ '). If we "assume the actual course of events", we have

$$(47) \quad F^{at}(a).$$

¹⁶⁵ Leibniz mentions Aristotle, Diodorus Cronus, Epicurus (341-270 BC), the Stoics, Abelard (1079-1142), Wyclif (c. 1330-84), Hobbes (1588-1679). See also Theod. §§ 209-10, 331-6; CD §22 (1710), L 661 (G.3 572; 1714), LC 5.76.

If this is true it is true no matter what else we assume, which is perhaps the reason why some, rather misleadingly on Leibniz' opinion, call it necessarily true (if true at all). On the other hand, we may consider (46) in all possible courses of events. Then we have

$$(48) \quad \forall x F^{xt}(a)$$

– if this is true we may properly say that (46) is necessary, but if it is false, then (46) is not necessary, even if $F^{at}(a)$ is true "no matter what".

However, the problem as it is traditionally conceived, at least in most cases, is really the actual "certainty" of (47), i.e. (47)'s being "simply" or worldlessly (and timelessly) true, even when t is in the future (from the creatural temporal point of view). Leibniz' solution, incorporated in the distinction between (47) and (48) is beside the point as a solution to this problem.

That is, even if Leibniz is – provided we make the correction involving supercompleteness – surely right when he points out that in his theory, whatever happens actually does not happen of necessity (i.e. in all possible worlds), the problem of *actual predetermination* remains. For it is not by any means evident that Leibniz' appeal to contingency helps to solve the problem of (actual) predetermination and (actual) free will. Since we *now* in fact inhabit *this* chosen actual world, the future is *now*, *in this world* determined (as seen from our temporal point of view); thus – it seems – it is *now* and *here* the case that no matter which volitions people have, the foreseen actual future will happen anyway; i.e. it is only an illusion that we may, on the basis of free decision, make a difference as to what will happen (indeed, it is illusory that we can freely make any decisions to begin with). Further, if we do not *actually* have free will, we do not have actual responsibility – this is quite independent of what happens in other possible plans of God. Accordingly, it surely seems that it does not help to insist that God's initial choice of a possible world could have been different. Our actual future is *now* certain (as Leibniz explicitly acknowledges) – all our actual future actions are actually predetermined, we

actually have no choice (or so it seems). As I said above, *this* is the traditional problem of free will and "necessity". That is, actual determination, which has seemed to many to be a fact, on the grounds of sheer logic, or on causality, or on God's attributes, or on the positions of the stars, has usually been meant by words like "necessary" and "fate" in this connection. Leibniz' procedure of redefining the word *necessité* and then showing that actual events do not happen of *necessité* certainly does not address to the problem as it is traditionally conceived.

In the famous correspondence between Leibniz, Antoine Arnauld (1612-94) and Ernst von Hessen-Rheinfels in 1686-7, Arnauld's initial objection to Leibniz' theory of complete individual concepts is the following (LA 15):

I find in these thoughts [that Leibniz puts forward in the summary of DM (see LA 12-4)] so many things that frighten me and [--] almost all men, if I am not mistaken, will find so shocking, that I do not see what use such a work can be, which will clearly be rejected by everybody. [--] If [the individual concept of each person contains once for all everything that will ever happen to him], God was free to create <or not to create Adam; but supposing he wished to create him,> everything that has happened since and will ever happen to the human race was and is obliged to happen through more than fatal necessity.

Arnauld sent a letter containing this passage to von Hessen-Rheinfels, who copied it, inadvertently – but significantly as we shall see shortly – leaving out the words I have put in corners. It seems clear to me that Arnauld's complaint is that objectionable *actual* predetermination is inherent in Leibniz' theory: Once God has made his initial choice of a possible world, viz. this world of ours, the future is, from the point of view of any moment of time, fixed, i.e. everything that happens happens inevitably, or, as Arnauld himself puts it, there is "an intrinsic and necessary connexion between Adam [--] and what has happened and will happen to him and his posterity" (LA 28; see LA 27-9). That Arnauld uses the word *necessité* about this is perfectly understandable, it (and its equivalents in other languages) being traditionally used to refer to actual predetermination (*inter alia*).

However, having a copy without the words in corners, it was very natural for Leibniz to assume that Arnauld was talking about *necessité* in the sense defined by Leibniz, viz. in the sense of omniworldness (or contradictoriness of negation). With this assumption, the dispute between Leibniz and Arnauld went, at least initially, in the wrong direction. Arnauld is objecting actual predetermination, Leibniz is replying that there is room for free will, since not all events and actions are necessary (in the sense of omniworldness). Even if it is due to von Hessen-Rheinfels' copy error, it must be said that Leibniz is mistaken about what Arnauld's criticism is.¹⁶⁶

4.6 Leibniz on free will and determinacy

However, there appears to be another strand in Leibniz' writings on the problem of free will, a strand that tries to deal with the traditional problem. There are indications already in DM and LA of Leibniz' coming to terms to actual predetermination. In DM §30 we find the following passage (my emphasis):¹⁶⁷

God in co-operating with our actions ordinarily does no more than follow the laws He has established, which is to say that He continually preserves and produces our being in such a way that thoughts come to us *spontaneously or freely* in the order *carried in the concept* of our individual substance, in which it could have been foreseen through all eternity. [--] For God foresees from all time that there will be a certain Judas, whose idea or concept which God has *contains this future free act*. There remains then only this question: Why does Judas, a traitor, who is merely possible in the idea of God, actually exist?

In LA 17 Leibniz replies to Arnauld's "necessity more than fatal" objection as follows: "as if a *free action* could not be contained in the concept or perfect view that God has of the person to whom it will belong" (my emphasis). In LA

¹⁶⁶ Cf. here Sleigh 1990, 58-9.

¹⁶⁷ See also DM §13 and the summary of DM §30 in LA 14.

23, in turn, Leibniz holds that "God, foreseeing and regulating everything from all eternity, chose in the first place the whole successive connexion of the universe, and in consequence [--] a particular Adam whom he foresaw as doing particular things and having particular children without this divine providence regulated from all time running counter to his *freedom*" (my emphasis again).

As a final quote from Leibniz in the Arnauld correspondence I reproduce the following (LA 52, my emphasis):¹⁶⁸

[T]he connexion between events, although certain, is not necessary, and [--] I am *free* to take this journey or not, for although it is included in my concept that I shall take it, it is also *included therein that I shall take it freely*. And there is nothing in me of all that can be conceived in general terms – i.e., in terms of essence, or a species concept, or an incomplete concept – from which one can infer that I shall necessarily take it [--]; and consequently, if I do not take this journey, that will not do violence to any eternal or necessary truth. However, [--] it is certain that I shall take it [--]. A falsity would [--] exist, if I did not take it, which would destroy the individual or complete concept of me, or what God conceives or conceived of me even before deciding to create me; for this concept embraces as possible existences or truths of fact or God's decrees, upon which facts depend.

Around the time of DM and LA, in a short manuscript called "A Specimen of Discoveries", Leibniz states (PM 78 / G.7 311-2; my emphasis):¹⁶⁹

¹⁶⁸ See also LA 39.

¹⁶⁹ Also in about 1686, in the paper "Primary Truths", Leibniz writes as follows (PM 89 / C 520-1; my emphasis):

The complete or perfect notion of an individual substance involves all its predicates – past, present and future. For that a future predicate is future is true now, and so is contained in the notion of a thing. Therefore, in the perfect individual notion of Peter or Judas, considered under the aspect of possibility by abstracting from the mind from the divine decree to create him, there are present and there are seen by God all the things that will happen to them, both *necessary and free*. From this it is manifest that God chooses, from an infinity of possible individuals, those which he thinks most consistent with the highest hidden ends of his wisdom. Nor is it exact to say that he decrees that Peter shall sin, or that Judas shall be damned; he decrees only that a Peter who will sin – *certainly*, indeed, *though not necessarily but freely* – and a Judas who will suffer damnation shall come into existence in preference to other possibles. [--] And although the future salvation of Peter is also contained in his eternal possible notion, yet that is not without the concurrence of grace; for in the same perfect notion of this possible Peter, the *assistance of divine grace* which is to be given to him is also *contained* under the aspect of possibility.

[N]othing happens in one creature of which some exactly corresponding effect does not reach all others. Nor, again, are there any absolutely extrinsic denominations in things. By this, the difficulties about predestination and the cause of evil are removed. For it can be understood that God does not decide whether Adam should sin, but whether that series of things in which there is an Adam whose perfect individual notion involved sin should nevertheless be preferred to others. [-] For in the perfect notion of an individual substance, considered in a pure state of possibility by God before every actual decree of existence, there is already whatever will happen to it if it exists, and indeed the whole series of things of which it forms a part. And so it should not be asked whether Adam will sin, but whether an Adam who will sin is to be admitted to existence. [- T]here is no doubt that God saw what would happen to Adam before he decided to create him, and so there is no obstruction to freedom from this quarter. Again, the notion of a possible Adam also *contains* the decrees of *free will*, divine and human, considered as possible.

There are several significant passages between 1686 and *Theodicy* as well. In around 1689, in "On Freedom", we find (PM 109-10 / FC 182-3, my emphasis):¹⁷⁰

So reasons can be given for the actions of minds no less than for the actions of bodies, although in the case of the choices that minds make there is no necessity. Sins arise from the original limitation of things; but God does not so much decree sins as admit to existence certain possible substances, *already involving* in their complete notion, under the aspect of possibility, a *free sin*, and so involving the whole series of things which they will be in.

In *Theodicy* we find more clearly this account we have seen developing in the passages just quoted – an account of the *compatibility of predetermination and free will* (instead of the rather useless distinction between absolute and hypothetical necessity). In *Theod.* §52, for example, we read (my emphasis):

It is clear that [God's world-creating] decree changes nothing in the constitution of things, and that God leaves them *just as they were in the state of pure possibility*; that is to say that he *changes nothing* in their essence or nature, or even in their accidents, which are already represented perfectly in the idea of this

¹⁷⁰ In 1692 Leibniz tells us that he is "of the opinion of St. Augustine and of St. Thomas and their followers with respect to the consistency of *predetermination with freedom and contingency*" (A.1.8 158, translation from Sleight 1990, 29; my emphasis).

possible world. Thus what is contingent and *free* remains so no less under the decrees of God than under his prevision.

According to Theod. §275, in turn, "it is written in the book of eternal truths, which contain all possibilities prior to any decree of God, that if he [the devil] were once created he would *freely* turn to evil. It is the same with Eve and Adam" (my emphasis). The following longer passage from *Theodicy* is also worth quoting (§§ 360, 364-5; still my emphasis).

Now that I have proved sufficiently that everything comes to pass according to determinate reasons, there cannot be any more difficulty over these principles of God's foreknowledge. Although these determinations do not necessitate, they cannot but be certain, and they foreshadow what shall happen. It is true that God sees all at once the whole sequence of this universe, when he chooses it, and that thus he has no need of the connexion of effects and causes in order to foresee these effects. [--] I have proved conclusively that God sees in each portion of the universe the whole universe, owing to the perfect connexion of things. There must therefore be no doubt that effects follow their causes determinately, in spite of contingency and *even of freedom*, which nevertheless exist together with certainty or determination. [--] Thus the Socinians cannot be excused for denying God the certain knowledge of future events, and above all of the future resolves of a *free* creature. For even though they had supposed that there is a freedom of complete indifference, so that will can choose without cause, and that thus this effect could not be seen in its cause (which is a great absurdity), they ought always to take into account that God was able to foresee this event in the idea of the possible world that he resolved to create. [-- T]he foreknowledge and the providence of God allows *freedom* to our actions, since God has *foreseen those actions in his ideas, just as they are, that is, free*. [-- T]here is no more difficulty in [reconciling freedom with providence] than [reconciling it with foreknowledge], because the decree to give existence to this action no more changes its nature than does one's mere consciousness thereof.

Finally, in the Latin summary of *Theodicy*, at CD §104, we find (translated in Rescher 1979, 142-3; my emphasis):¹⁷¹

¹⁷¹ Leibniz' strategy in these passages is by no means his own invention, for it is utilized by St. Augustine, Boethius and Aquinas. For instance, in *On Free Choice* 3.iii.6-iv.10, St. Augustine writes as follows (my emphasis):

You wonder how it can be that these two propositions are not contradictory and incompatible, namely that God has foreknowledge of all future events, and that we sin voluntarily and not by necessity. [--] What I say is that when you become happy in the future it will take place not

Nor does the foreknowledge or preordination of God impose necessity even though it is also infallible. For God has seen things in an ideal series of possibles, such as they were to be, and *among them man freely sinning*. By seeing the existence of this series he did not change the nature of the thing, nor did he make what was contingent necessary.

4.7 Divine foreknowledge and free will

Let us thus consider again the compatibility of God's all-embracing foreknowledge with human free will (and free action). It should be rather obvious that foreknowledge does not exclude free will: It may very well be known beforehand what a free agent freely does in some given situation.¹⁷² As an analogy, let us imagine a lottery with genuine randomness and an infallible

against your will but in accordance with your willing. Therefore, though God has foreknowledge of your happiness in the future, and though nothing can happen otherwise than as he has foreknown it (for that would mean that there is no foreknowledge) we are not thereby compelled to think that you will not be happy voluntarily. [-] Hence *God has also foreknowledge of our power to will*. My power is not taken from me by God's foreknowledge. [- Y]ou would not directly compel the man to sin, though you knew beforehand that he was going to sin. Nor does your prescience in itself compel him to sin even though he was certainly going to sin, as we must assume if you have real prescience. So there is no contradiction here. Simply *you know beforehand what another is going to do with his own will*. Similarly God compels no man to sin, though he sees beforehand those who are going to sin by their own will.

(Cf. also *The City of God* 5.9, to be quoted in the next section.)

Boethius, on his part, states in *Consolation of Philosophy* 5.6 (my emphasis again):

And God looks in His present upon those future things which *come to pass through free will*. [-] Without doubt [-], all things that God foreknows do come to pass, but *some of them proceed from free will*; and though they result by coming into existence, yet they do not lose their own nature, because before they came to pass they could also not have come to pass.

Furthermore, in Theod. §§306-12 Leibniz quotes Lorenzo Valla's (1407-56) presentation of this strategy (cf. the next note).

¹⁷² Leibniz also thinks that foreknowledge and human freedom are straightforwardly compatible: "it is very easily seen that foreknowledge in itself adds nothing to the determination of the truth of contingent futurities, save that this determination is known: and this does not augment the determination of the 'futurition' (as it is termed) of these events" (Theod. §37). Cf. Theod. §§306-12 where Leibniz clearly distinguishes the (easier) problem of foreknowledge from the (harder) problem of providence, by quoting approvingly from Lorenzo Valla's *Dialogue on Free Will* (c. 1535).

oracle who can tell beforehand what the first number in the lottery will be. Even though it is thus foreknown what the first number will be, this number may still come out by pure chance – infallible prediction really has nothing to do with randomness. Genuine chance is compatible with infallible prediction – the statement, "If it is infallibly predicted, it does not happen by chance" is simply false. Similarly, the following simply does not hold: "If it is foreknown, it does not result by a free choice".¹⁷³ That God knows, timelessly or "from all eternity", what the free choice of an agent in a given situation is or will be (or would be) does not concern the question whether that choice is free. For instance, Jesus' knowing beforehand that Peter will deny him thrice before the cock crows, does not entail that these denials are not free.

Relating specifically to my discussion of future contingents in chapter 3 above, the following passage in Theod. §170 is interesting (my emphasis):

The objection is raised that it is necessary *ex hypothesi* for the future to happen, as it is necessary *ex hypothesi* for the past to have happened. But there is this difference, that it is *not possible to act on the past state*, that would be a contradiction; but it is *possible to produce some effect on the future*. Yet the hypothetical necessity of both is the same: the one cannot be changed, the other will not be; and once that is past, it will not be possible for it to be changed either.

What Leibniz implies here is that if we take an actual past event *P* and an actual future event *F*, there is the difference that whatever we do now, has no cause-effect relation to *P* but it may have such a relation to *F*. There is, however, no such asymmetry with respect to "necessity" as the traditional Aristotelian doctrine has it – *both* are determined (modulo God's choice), *neither* is necessary (which is what I put forward in chapter 3 above).

Let us now consider again the scholastic argument from God's foreknowledge to the "necessity" of whatever happens, presented in section 4.3 above:

¹⁷³ By this analogy I am of course not saying that a free choice is, or must be, random.

- (P1) Necessarily, if God has always known that something will be, it will be [i.e. $\forall x(Kp^x \rightarrow p^x)$ in my notation]
- (P2) Whatever necessarily follows from what necessarily will be, necessarily will be [$\forall x(p^x \rightarrow q^x) \ \& \ \forall xp^x \rightarrow \forall xq^x$]
- (P3) If God has always known that something will be, this is so of necessity [$Kp^a \rightarrow \forall xKp^x$]
- (C1) If God has always known that something will be, it necessarily will be [$Kp^a \rightarrow \forall xp^x$]
- (P4) God has always known whatever will be [$p^a \rightarrow Kp^a$]
- (C2) Whatever will be, necessarily will be [$p^a \rightarrow \forall xp^x$].

This argument is valid, for the first conclusion (C1) logically follows from the premises (P1)-(P3) and the second conclusion (C2) from (P4) and (C1); but it is not sound, for the premise (P3) is simply false. However, Aquinas' way to combat (P3) by appealing to the timelessness of God's knowledge is, as I have already pointed out above, not plausible (not because of there being anything suspicious in the notion of God's timelessness, but because from a temporal point of view "has always known" is an entirely proper way to spell out God's knowledge). Above, we have already met with the following simple argument against (P3): From God's infallibly knowing beforehand, or having always known, say, that somebody will *actually* land on Mars in 2010, it does not follow that with respect *every* possible world x God infallibly knows beforehand, or has always known, that somebody will land on Mars in 2010 *in* x , for the simple reason that this is not even true for many x 's. God knows and has always known and will always know, if these temporal expressions are preferred, all truths and falsehoods of the form $\exists yL^{xt}(y)$, e.g. the truths $\exists yL^{at}(y)$ and $\sim \exists xL^{wt}(x)$, where w is a world different from a . Accordingly, (P3) does not hold. Probably something like $Kp^a \rightarrow \forall xKp^a$ – note the bogus necessity in the

consequence – has often been taken for (P3); but this would be an entirely useless premise (being equivalent with $Kp^{\alpha} \rightarrow Kp^{\alpha}$) and nothing problematic would be derivable from the remaining premises.

It may be instructive to consider also what is perhaps the strongest modern argument for the incompatibility of foreknowledge and free will. In the presentation below, '*e*' represents a definite event that happens at a definite moment of time and statements like "*e* happens" and "God believes that ..." are to be understood as timeless predications. The rest of the notation is self-explanatory.¹⁷⁴

(Q1) *e* happens: $H(e)$ [factual assumption]

(Q2) *e* happens if and only if God believes that *e* happens (i.e. if and only if the event of God's believing that *e* happens happens): $H(e) \leftrightarrow H(BH(e))$ [the omniscience of God, as stated in terms of belief: God has all and only true beliefs]

(Q3) If God believes that *e* happens then (the event of) God's believing that *e* happens is (humanly) unpreventable: $H(BH(e)) \rightarrow \sim \emptyset BH(e)$ [the unpreventability of God's timeless actions]

(Q4) A "consequent event" of an unpreventable event is unpreventable, i.e. if an unpreventable event *a*'s happening entails an event *b*'s

¹⁷⁴ The argument to be presented is a modification of the one appearing in Hasker 1989 (73-4). (Cf. Pike 1965 (117f.)) Like the argument from (P1)-(P4) to (C1) and (C2), Hasker's version is specifically Ockhamian in the sense that it is formulated in terms of past tense statements of God's beliefs (e.g. "God has always believed that *e* happens") and the Aristotelian doctrine of the "necessity" of the past. Also, what I formulate as "being able to prevent an event from happening" corresponds to "having a power to bring it about that a proposition is false", or "having an ability to render a proposition false" in Hasker's argument. (For analogous nontheological arguments for the incompatibility of determinism and free will, see e.g. van Inwagen 1983, 70f., and Fischer 1994, esp. chs. 1-3.)

happening, then b is unpreventable: $(H(a) \rightarrow H(b)) \ \& \ \sim\wp a \rightarrow \sim\wp b$ [a plausible "power entailment" principle,¹⁷⁵ cf. Hasker 1989, esp. 104-15]

(D1) God believes that e happens: $H(BH(e))$ [from Q1 and Q2]

(D2) God's believing that e happens is unpreventable: $\sim\wp BH(e)$ [from Q3 and D1]

(D3) e is unpreventable: $\sim\wp e$ [from Q2, Q4 and D2].¹⁷⁶

The conclusion (D3) reached in this argument, based on the premises (Q1)-(Q4), is that the event e is unpreventable (or unalterable or inevitable, which words we could have used just as well). Generalizing this argument and treating (Q1) as a conditional premise, we have derived, from (the appropriate generalizations of) the premises (Q2)-(Q4) the conclusion,

All (actual) events are unpreventable (unalterable, inevitable).¹⁷⁷

That is, if e is an actual event (that happens, happened or will happen at a definite time), it happens unalterably (inevitably). Considering specifically this argument as applied to a future event, we are back to Aristotle's sea-battle dilemma. My rejoinder to this argument is, of course, the same as before: I accept (Q2) but deny (Q3) and (Q4), at least in the problem-producing sense. For if in these latter an event's "unpreventability" means that it necessarily

¹⁷⁵ Also known as the *Principle of the Transfer of Powerlessness* (Fischer 1994).

¹⁷⁶ By taking, for instance, e as the event of Adam's eating the apple at t and reading "unpreventable" as "not within Adam's power to prevent", the conclusion becomes: It is not within Adam's power to prevent himself from eating the apple at t , i.e. it is not within Adam's power to refrain from eating the apple at t (which of course at once generalizes to all actions of all agents).

¹⁷⁷ And also: No agent can ever refrain from doing what he or she or it does.

happens (in the Leibnizian sense of omniworldness or "contradiction of opposition"), then e.g. (Q3) is simply false: God's correctly believing (and of course in fact knowing) that *e actually* happens does not exclude *e's* failing to happen in some other worlds.¹⁷⁸ If on the other hand unpreventability means in this argument what Leibniz often calls "certainty", the conclusion is entirely innocuous: Assuming that something will happen, it is of course true to say that it will happen; if it really will be a part of the actual history, then it "inevitably" will be a part of actual history; if it really is so that the world will be such that *e* happens, it most certainly will be such that *e* happens; *Que sera sera*. The "inevitability" involved is of the bogus sort, and is thus inconsequential.

Here is a summarizing example: At *t*, a free agent has two alternatives, *A* and *B*, to choose from. No matter whether he freely chooses *A* or *B*, God timelessly knows, or, if temporal mode of expression is preferred, has always known (and will always know), what this free choice is (or will be). We may also put this as follows: Let us assume that the free choice is *A*. Thus, God knows that it is *A*. Nevertheless, the agent's free choice could have been *B* – had this been the case, God would of course not have known that the choice is *A* but would have known, instead, that it is *B*.¹⁷⁹ Whichever the free choice is, God knows it (and knows it beforehand, if this manner of expression is preferred). One can freely prevent by a free action (based on a free decision) e.g. an accident from happening, even though this is foreseen.

4.8 Providence and free will

¹⁷⁸ This is essentially Alvin Plantinga's reply to arguments of this sort. See esp. Plantinga 1974[b] (66-73), and cf. also Quinn 1985.

¹⁷⁹ The clearest way to put this is to consider worlds *sub ratione possibilitatis* and say as follows: God correctly believes (and knows) that our agent chooses *A* in the actual world (i.e. in the world God eventually actualizes) and chooses not *A* but *B* in some other worlds.

However, this is not the end of the matter. First, even if divine foreknowledge is compatible with human free will, it is not at all clear that strict divine providence is. Also, the compatibility of free will and God's foreknowledge does not in itself solve the problem of evil – it does not explain why God, although being omnipotent, omniscient and omnibenevolent, allows, as it seems, many evils to happen. Furthermore, I have not considered at all the very notion of human free will. In order to tackle these issues, I shall again first reproduce some relevant passages from Leibniz and then try to explicate in which sense exactly is human freedom of choice compatible with the "inevitability" of the Plan, and how the problem of evil is solved.

Leibniz' view that "*freedom* is exempt not only from *constraint* but also from *necessity*, although it be never without infallible *certainty* or without inclining *determination*",¹⁸⁰ expressed more fully in the following passage from Theod. §§ 45-9, 52, may make one doubt (despite Leibniz' insistence to the opposite) whether there is, after all, any room for human freedom in Leibniz' doctrine (my emphasis):¹⁸¹

There is always a *prevailing reason* which prompts the will to its choice, and for the maintenance of freedom for the will it suffices that this reason should incline without necessitating. [-- W]hen one leaves a room there are such and such reasons determining us to put the one foot first [-- A] disposition [towards action] contains a predetermination, whether the doer have received it from without, or have had it in consequence of his own antecedent character. [-- A] creature [is] *predetermined by its preceding state*, which inclines it to one course more than to the other. Moreover, all these connections of the actions of the creature and of all creatures were represented in the divine understanding, and known to God through the knowledge of mere intelligence [i.e. intelligence by means of which God comprehends all possibilities, cf. Theod. §40], before he had decreed to give them existence. [-- T]here is a *predetermination in the preceding state* of the free

¹⁸⁰ Theod. §280; similarly in CD §102.

¹⁸¹ Already in DM §30 Leibniz holds that in choice situations God, "without at all necessitating our choice, determines it by that which appears most desirable. For absolutely speaking, our will as contrasted with necessity, is in a state of indifference, being able to act otherwise, or wholly to suspend its action, either alternative being and remaining possible."

creature, which inclines it to be determined. [--] God [--] could always account for the course man has adopted, by assigning a cause or a predisposing reason which has actually induced him to adopt it [--]. All is therefore *certain and determined beforehand* in man, as everywhere else, and the human soul is a kind of *spiritual automaton*, although contingent actions in general and *free action* in particular are *not on that account necessary* with an absolute necessity, which would be truly incompatible with contingency. Thus neither futurity in itself, certain as it is, nor the infallible prevision of God, nor the predetermination either of causes or of God's decrees destroys this contingency and this freedom. [--] Since [--] God's decree consists solely in the resolution he forms, after having compared all possible worlds, to choose that one which is the best, and bring it into existence [--] by means of the all-powerful word *Fiat*, it is plain to see that this decree changes nothing in the constitution of things: God leaves them just as they were in the state of mere possibility, that is, changing nothing either in their essence or nature, or even in their accidents, which are represented perfectly in the idea of this possible world. Thus *that which is contingent and free remains* no less so under the decrees of God than under his prevision.

In Theod. §§ 287-8, 291, 298, in turn, we find the following very important passage (my emphasis):

[W]hat inclines the will towards good infallibly, or certainly, does not prevent it from being free. [--] Freedom [--] consists in *intelligence*, which involves a clear [and distinct (§289)] knowledge of the object of deliberation, in *spontaneity*, whereby we determine [according to an "inner source of our actions, as Aristotle rightly conceived" (§290)¹⁸²], and in *contingency*, that is, in the exclusion of logical or metaphysical necessity. [--] The free substance is self-determining and that according to the motive of good perceived by the understanding, which inclines it without necessitating it [--]. It is nevertheless well to point out that the imperfection present in our knowledge and our spontaneity, and the infallible determination that is involved in our contingency, destroy neither freedom nor contingency. [--] The soul has in itself a perfect spontaneity, so that it depends only upon God and upon itself in its actions. [--] It is always we who produce it [i.e. an act of will], for it is our action, but there are always reasons that make us act, without impairing either our spontaneity or our freedom.

Here, Leibniz holds that for an action, *C*, performed by a free created (human)

¹⁸² For Aristotle, see *Nicomachean Ethics* III.1-2 (esp. 1110b, 1111b6-7).

agent, *A*, to be free, two conditions must be satisfied:¹⁸³

(F1) *A* could have refrained from doing *C*, i.e. *A*'s not performing *C* is (logically or metaphysically) possible (i.e. *A*'s performing *C* is not necessary).¹⁸⁴

(F2) *A* performs *C* spontaneously or autonomously or self-determinatively, or according to principles internal to, or originating from, him or her.

A rough statement of Leibniz' explanation of human freedom, extractible from passages given above¹⁸⁵ is something like the following. As indicated above, before the creation God has in his mind all possible courses of events, i.e. plans, each plan amounting to a whole history of a possible world. Now, many plans contain free choices of possible (creatable) rational agents involved in those plans. On creation, God does not make human choices that are free *sub ratione possibilitatis* less free. In short, human free will is *included* in the course of the world (both the actual world and many unactualized ones).¹⁸⁶

However, the description of the possibility of free will on this general level is far from being convincing: It is not enough to be told that since free will is included in what is possible, it is included in the actualization of a possible world – to be convinced of this one needs *at least* to know *what exactly it means* that free will is so included. Furthermore, the description given really does not amount to much more than the view of St. Augustine, Boethius and

¹⁸³ There is also the third condition that the agent must have relevant knowledge or understanding of the alternatives – I shall assume that this condition is satisfied.

¹⁸⁴ It is Leibniz' odd emphasis on this modal condition that is misleading in many passages I have given above (especially in section 4.5).

¹⁸⁵ In section 4.6 in addition to the present one.

¹⁸⁶ Further, such free choices are of course (fore)known by God – after all, we are talking about a plan that is in his mind.

Aquinas.¹⁸⁷ (Of course, there is nothing wrong with this as such. I mean rather that this view of human freedom as something that is included in the course of events is well known since St. Augustine, or rather, as we shall see, since Chrysippus (at least) – but apparently it was not generally considered as wholly satisfactory, since this question was studied repeatedly between St. Augustine and Leibniz.)¹⁸⁸ Unfortunately, Leibniz does not sufficiently fill in the details of his account of free will.

In order to try to reconstruct Leibniz' compatibilist account of free will, we must consider the famous slogan Leibniz uses at numerous places in his writings: *inclinari sans nécessiter*. When Leibniz says that the relevant

¹⁸⁷ For St. Augustine, he writes in *On Free Choice* 3.iii.6-iv.10 as follows (my emphasis): "[God] *determined once for all how the order of the universe he created was to go on*, and he never changes his mind. [-- T]hough God knows how we are going to will in the future, it is not proved that we do not voluntarily will anything. [--] What I say is that when you become happy in the future it will take place not against your will but in accordance with your willing."

Similarly, in *The City of God* 5.9, he writes (again my emphasis): "But it does not follow that, though there is for God a certain order of all causes, there must therefore be nothing depending on the free exercise of our own wills, for *our wills themselves are included in that order of causes which is certain to God*, and is embraced by His foreknowledge, for *human wills are also causes of human actions*; and He who foreknew all the causes of things would certainly among those causes not have been ignorant of our wills. [-- O]ur wills themselves have a very important place in the order of causes."

Boethius' contribution, parts of which I have already quoted above, can be found in *Consolation of Philosophy* 5.6; e.g.: "divine insight precedes all future things, turning them back and recalling them to the present time of its own peculiar knowledge. It does not change, as you may think, between this and that alternation of foreknowledge. It is constant in preceding and embracing by one glance all your changes. [--] God is ever the constant foreknowing overseer, and the ever-present eternity of His sight moves in harmony with the future nature of our actions".

Aquinas, in turn, tells us in *Summa Contra Gentiles* 3.94 that "though all things happen by divine providence, some things are so foreseen by God as that they are done freely by us."

¹⁸⁸ Of course, it seems that this strategy is still unappreciated, since this matter is discussed over and over again even today.

sufficient reasons or causes for a given human action "incline without necessitating", he does *not* mean that these reasons somehow leave it uncertain which action results – as we have seen in many quotes above, all (actual) events, including all human actions, are "certain" or determinate from the beginning of the world, for they are included in the complete concept of Adam (as well as that of Eve, that of the apple, that of Kofi Annan, and so on).¹⁸⁹ What Leibniz means is, simply, that although all (actual) actions are determined ("inclined"¹⁹⁰ by their reasons), they are not necessary – the agent of the action "could have done otherwise". This is clear, for instance, from the following passage ("A Letter on Freedom", PM 112-3 / LH 115-6; c. 1689):¹⁹¹

[N]othing ever takes place without its being possible for one who knew everything to give some reason why it should have happened rather than not. [--] I say that Adam sinned without necessity, although he who knows everything could give a reason why he rather let himself sin than remain in innocence. [--] There is always [in the soul] a reason, that is to say a greater inclination, for what has in fact been chosen, which may come not only from arguments good or bad, but also from passions, habits, dispositions of the organs and of the mind, external impressions, greater or less attention, etc. But this inclination does not master freedom, although it inclines it. There is a great deal of difference between a necessary cause and a certain concomitant.

Again, Leibniz, referring to the views of Durand de Saint-Pourçain (d. 1332) and Isaac Jacquelot (1647-1708), writes (Theod. §361):¹⁹²

¹⁸⁹ See here Parkinson 1995 (219), with references to Leibniz.

¹⁹⁰ Quite frankly, a more exact slogan of Leibniz' view is "compels without necessitating". (Leibniz' preference of "inclines" to "compels" is of course understandable, the latter word being somewhat repugnant to many.)

¹⁹¹ See also e.g. LA 46, NE 175-9, WF 179 (G.3 468, 1704); Theod. §§ 45-6, 336; LC 5.8-10; G.7 109 (n.d.).

¹⁹² In Theod. §132, in turn, Leibniz, commenting on a passage on Aristotle's *De Interpretatione* 9 in Pierre Bayle's (1647-1706) *Reply to the Questions of a Provincial (Réponse aux questions d'un provincial, 1704-1707)*, writes as follows:

I would not take 'free' and 'indifferent' for one and the same thing, and would not place 'free' and 'determined' in antithesis. One is never altogether indifferent with an indifference of equipose;

Contingent futurities are seen determinately in their causes, and [--] God, who knows all, seeing all that shall have power to tempt or repel the [human] will, will see therein the course it will take. [-- The] dispositions of the human heart and those of circumstances acquaint God unerringly with the choice that man shall make.¹⁹³

The ultimate problem in Leibniz' account is that it is doubtful whether there is room in it for human freedom after all. Specifically, given Leibniz' assumptions, it may be doubted whether (F1) holds, i.e. whether the agent could have refrained from doing what he does or could have done otherwise after all. Let us ask whether a particular action of Adam's, say,

(H) Adam's actual action of raising his left hand at the moment of time t ,

is free. First, it should satisfy the could-have-refrained-from-doing condition (F1) – Adam performed this action freely only if he could have done nothing or, say, could have raised his right leg instead. What does this "could have" mean here? For comparison, let us consider the statement, "Finland is a republic but it could be a kingdom". A possible worlds explication of this is something like, "Finland is actually a republic but in some other worlds it is a kingdom". Here, *other truths* of these other worlds remain unarticulated, e.g. whether Sweden is a republic or kingdom or what, for the obvious reason that they do not matter, they are not relevant with respect to the statement we are considering. Returning then to (H) and (F1), what is relevant in the consideration of other possible worlds and Adam's freedom? A natural

one is always more inclined and consequently more determined on one side than on another: but one is never necessitated to the choice that one makes. I mean here a *necessity* absolute and metaphysical; for it must be admitted that God, that wisdom, is prompted to the best by a *moral* necessity. It must be admitted also that one is necessitated to the choice by a hypothetical necessity, when one actually makes the choice; and even before one is necessitated thereto by the very truth of the futuration, since one will do it. These hypothetical necessities do no harm.

¹⁹³ Leibniz continues (Theod. §§362-3): "Those who have confused this determination with necessity have fabricated monsters in order to fight them [-- and] have fallen into great absurdities [--, e.g.] have admitted something which happens without the existence of any cause or reason for it [e.g. Epicurus and Cicero (in *On Divination*)]. [--] The Stoics already derived from the decrees of God the prevision of events."

suggestion is that no possible world is relevant to this consideration unless it has exactly the same sufficient reasons for Adam's action at t as Adam's actual action described in (H) had. This is because one cannot plausibly claim – or so it may at least be argued – that Adam could have refrained from raising his left hand in the action situation (H) by appealing to his refraining from performing this action in some *relevantly different* situation. Thus, if R is the set of sufficient reasons, known only by God, for Adam's performing (H), it seems that only worlds with R should be taken into account when we consider the statement "Adam could have refrained from raising his hand at t ".

This may be illustrated further by means of *partial world descriptions*. Let us denote by ' x_{yz} ' the history of the world x up to the moment of time y , *ignoring* altogether all factors that are not relevant reasons for Adam's action z at y (which means, *inter alia*, ignoring the continuation of this world after t). Considering still (H), that Adam in a relevant sense could have done otherwise – i.e. other than the action, H , of raising his left hand – should imply that there is a world w such that the relevant (partial) initial segment of w , w_{tH} , is identical with the corresponding segment of α , α_{tH} , but the continuation of w differs from that of α : In α but not in w Adam raises his left hand at t . That is, it should be the case that while Adam raises his left hand at t in α , he, say, raises his right leg in w (with $\alpha_{tH} = w_{tH}$).

Now, Leibniz is in trouble: There is no such world w , because he assumes that "the prevailing inclination always triumphs" (Theod. §53), and this inclination is, by assumption, exactly the same in α (at t) and w (at t).¹⁹⁴ Leibniz is very

¹⁹⁴ To be more precise, there is no such world w *provided* that creatures are allowed to act freely. For arguably, there are pairs of possible worlds that are exactly alike up to a choice situation – I mean choice by a creature – in which God allows a free choice in only one of these worlds (with the implication that these worlds are dissimilar afterwards). However, it will not do to argue for freedom on the basis of this (i.e. to take this as proving (F1)): That an agent may be *prevented* from doing something can hardly be used to back up the claim that she is free in doing it.

Also, by a *miracle* God may at any time change the deterministic course of the

strongly against the assumption that human agents are in some choice situations *indifferent* as to what they shall do next (including inactivity), in the sense that there are no reasons to be found, even by God, for the agent's doing this rather than that – this would mean, absurdly in Leibniz' opinion, that there would be no distinguishing factor that explains why this happens rather than that, no reason that separates the happening of one event (or performing of one action) from another.¹⁹⁵ In short, Leibniz regards "reasonlessness" as a "great absurdity" (Theod. §362) – *nihil sine ratione* (C 25 (1677), and elsewhere). The denial of the compelling nature of (the complete set of) inclining reasons is intolerable from the theological point of view as well. For there must be some way for God to know the actual history completely, or in fact all possible

physical world of bodies, regulated by the laws of nature. This means that there are innumerable many pairs of worlds, which have exactly the same starting-point, or initial state, and same laws of nature – these worlds are exactly the same up to a moment of time when God (for the first time) overrules a natural law (or prevents a free choice) in (only) one of them. (Strictly speaking, it is misleading or in fact misguided to say that two worlds are exactly the same up to a moment of time. This is because in Leibniz' view a state of a world is always "pregnant with future", or "the future and the past is readable from the present", that is, I take it, the present in some sense contains all past and future events. By speaking of shared "initial segments" of worlds I mean of course that all relations to the future are ignored.)

¹⁹⁵ In addition to passages given above, we read in AG 194 (G.3 401; 1707):

[W]e need to be very cautious here so that we do not fall into a chimera which shocks the principles of good sense, namely, what I call an *absolute indifference* or *indifference of equilibrium*, an indifference that some people imagine freedom to involve, and what I believe to be chimerical. We must therefore consider that this interconnection [between reasons and action --] is not necessary, absolutely speaking, but that it is certainly true, nevertheless, and that, in general, every time that the circumstances, taken together, tip the balance of deliberation more on one side than the other, it is certain and infallible that the former side will be chosen. [-- The] *choice follows the greatest inclination* (by which I understand both passions and reasons, true or apparent).

In G.7 109 (n.d.), in turn, we find: "A liberty of indifference is impossible. So that it cannot be found anywhere, not even in God. For God is determined by himself to do always the best. And creatures are always determined by internal or external reasons" (English translation in Russell 1900, 195n).

For further denials of indifference, see e.g. C 25 (n.d.), G.7 111 (n.d.), NE 179-80, Theod. §§ 45, 53-4, 132, 288-91, 301-3, 312-7, 364-5, §14 of *Observations on the Book concerning the Origin of Evil* (H 419 / G.6 414).

histories or plans (in their entirety). If when Adam is in a genuine choice situation in the (partial) plan w , at t there is nowhere to be found, even by God, the determining reasons for Adam's next free action in this situation, God cannot know what this plan w in fact is!¹⁹⁶

It is historically interesting that this particular difficulty of Leibniz' was duly noticed (at least) something like fifteen to nineteen centuries earlier. In *On Stoic Self-contradictions* 46 (1055def), Plutarch (c. 50-125 AD) writes as follows (criticising the view, it seems to me, to which Leibniz is eventually committed):¹⁹⁷

¹⁹⁶ That "possibilities are in the mind of God" is of course Leibniz' answer to the troublesome question of *how* God can know everything, including the future (with free human choices). William Ockham, for example, writes in *Sentences* I.38 about this matter in the following defeatist fashion (from *Philosophical Writings*, pp. 132-4): "[I]t has to be held without any doubt that God knows all future contingent facts evidently and with certainty. But to explain this evidently, and to express the manner in which he knows all future contingent facts, is impossible for any intellect in this life. [--] Although [the fact that future contingents are in some way or other present to God] cannot be proved by any *a priori* natural reason possible to us, yet it can be proved from authentic texts of the Bible and from the saints". (In Theod. §365 Leibniz comments on Descartes' defeatism in this issue. See also Theod. §292 and PM 107 (FC 180; c. 1689).)

As such, this view that some theological issues are humanly incomprehensible, is of course standard, indeed, as Ockham indicates, biblical: See e.g. Ps. 145:3, Isa. 40:28, Rom. 11:33.

¹⁹⁷ Read "fate" in this passage as "the complete plan chosen by God" or as "the complete chain of causes". That "fate" or "destiny" was often understood in the antiquity as determinate chain of causes and events is shown by Cicero's following quotation, in *On Fate* x.20-1, from Chrysippus: "[Since] uncaused motion does not exist [--] all things that take place take place by precedent causes; if this is so, all take place by fate; it therefore follows that all things that take place take place by fate"; and see also the following passage from Cicero's *On Divination* 1.55.125: "Now by fate I mean the same that the Greeks call εἰμαρμένη, that is, an orderly succession of causes wherein cause is linked to cause and each cause of itself produces an effect. That is an immortal truth having its source in all eternity." Also, in *Lives* 7.149, Diogenes Laertius (3rd c. AD) characterizes the Stoic conception of fate as follows: "Fate is a continuous string of causes of things which exist, or a rational principle according to which the cosmos is managed" (from Inwood & Gerson

And how does his [Chrysippus' (c. 280-207 BC)] theory of possibilities not conflict his theory of destiny [i.e. fate, i.e. chain of causes]? For if "possible" is not defined in the manner of Diodorus [Cronus] as that which either is or will be true [i.e. statistically] but if everything is susceptible of coming about, even if it is not going to come about, many of the things that are not in accordance with destiny will be possible. [Consequently, either] destiny loses her invincible and ineluctable and all-prevailing force; or, if she is what Chrysippus maintains, that which is susceptible of coming about will often fall into the category of the impossible, everything true will be necessary [i.e. inevitable], being constrained by the most sovereign necessity of all, and everything false impossible, since the mightiest cause is adverse to its becoming true. For how can he whose death at sea has been determined by destiny be susceptible of dying on land, and why is it possible for the man at Megara to go to Athens when he is prevented by destiny from doing so?

Leibniz' rejoinder at this point is, of course, that Plutarch, as well as the problem producing argument involving $\alpha_{iH}=w_{iH}$ above, deal with hypothetical "necessity", not necessity proper, i.e. absolute necessity. Let us try to explicate what exactly this means. In the argument above, the crucial problematic assumption is the view that *all* reasons for an (actual) action are relevant when we consider the modal condition (F1) of freedom of action. To take into account all such reasons is in fact to assume the relevant part of the actual world as given, that is, it is to consider hypothetical "necessity" (or unpreventability or inevitability, as it is also called). Obviously, then, the requirement that all such reasons are included in the consideration of actions in other possible worlds must be relaxed. But how?

Consider a natural event E that actually happens at t . It is hypothetically "necessary" that E should happen at t : Given the set of actual laws of nature and the "state" of the actual world at t (or at the moment just before t), E indeed "certainly" or determinately happens.¹⁹⁸ But the happening of E at t is not absolutely necessary. The Leibnizian explanation for this is that even if the state of the world were exactly like the actual world at t , something else than

1988, 100). See also St. Augustine, *The City of God* 5.8.

¹⁹⁸ Looking away from miracles.

E could have happened *had the laws of nature been appropriately different from what they actually are*.¹⁹⁹ (This means that the laws of nature are not regarded as being part of the state of the world – alternatively, if they *are* taken to be contained in the world-states, we must reformulate the previous sentence as follows: The Leibnizian explanation for this is that even if the state of the world *minus the laws of nature* were exactly like the actual world at *t minus the laws of nature*, something else)

Taking a hint from this consideration I suggest the following as the solution to the problem connected to (F1): That Adam could have done at *t* something else than raise his left hand does not mean that he might have done something else given the *whole* reason for his actual action or the *complete* set of causes of it, but that he could have acted otherwise *had his character*, or internal *individual nature, been somehow different*.²⁰⁰ Thus, the ultimate Leibnizian position of human freedom as connected to determination and necessity is, it seems to me, as follows: Given Adam's internal nature or character and the external requisites, he is bound to do what he does, but in many possible worlds he could have acted otherwise, this latter meaning that he could have done

¹⁹⁹ Cf. Theod. §350: "M. Bayle [--] fears that, if God is always determinate, nature could dispense with him and bring about the same effect which is attributed to him, through the necessity of the order of things. That would be true if the laws of motion, for instance, and all the rest, had their source in a geometrical necessity of efficient causes; but in the last analysis one is obliged to resort to something depending upon final causes and upon what is fitting."

See also PM 100 (C 20; c. 1686): "Since the fact that the series [viz. this series of things, the actual world] itself exists is contingent and depends on the free decrees of God, its laws [of nature] also will be contingent in the absolute sense; but they will be hypothetically necessary and will only be essential *given the series*."

²⁰⁰ Here, in connection with human actions, the change in character does the job the change in the laws of nature did in connection with natural events, i.e. the job of explaining the lack of necessity.

something else had his character been somehow different.²⁰¹ Some support for the claim that this is Leibniz' view is offered by his following explanation of "the necessity that must be rejected and the determination that must be allowed" in the Answer to Objection III in the Summary of *Theodicy* (H 380-2 / G.6 380-1; my emphasis):

The truth is that the necessity contrary to morality, which must be avoided [--] is an insuperable necessity, which would render all opposition unavailing, even though one should wish with all one's heart to avoid the necessary action, and though one should make all possible efforts to that end. Now it is plain that this is not applicable to voluntary actions, since *one would not do them if one did not so desire*. Thus their prevision and *predetermination* is not absolute but it *presupposes will*: if it is certain that one will do them, it is no less certain that one will do them. [--] The necessity of such events is called conditional or hypothetical, or again necessity of consequence, because it presupposes the will and the other requisites. But the necessity which destroys morality [--] is found in the things that will be whatever one may do and whatever one may will to do [--]. This [--] is called an absolute necessity. [--] In voluntary actions, on the contrary, [--] precepts [--] are included in the order of causes that make action exist.

As an illuminating example, let a , say Adam, actually have such a weakness in his character that he cannot resist a certain temptation, e , at the time t , i.e. he gives up to this temptation: $G^{at}(a, e)$. This same Adam, assume further, is in the world u sufficiently stronger with respect to that temptation: $\sim G^{ut}(a, e)$. It is in the original constitution of Adam, as conceived by God in his understanding, that he is such-and-such in a and such-and-such in u : Adam is that object that falls under the supercomplete concept

$$G^{at}(a, e) \ \& \ \sim G^{ut}(a, e) \ \& \ \dots$$

We may now say that in the actual world Adam *freely* gives up to the temptation, because, (i), in other worlds he does not do so (for as we just saw, in u Adam, with a slightly stronger character, resists the temptation) and, (ii),

²⁰¹ Note that in many cases it may be a close call: Even a very small change in the character may be enough to alter the choice of action.

the source of Adam so giving up is internal to him: it is due to his original constitution as conceived by God.

What now remains to be done is to explain (ii), i.e. to give an explication of how the character of a rational creature can be an internal, spontaneous feature of him or her. That is, let us turn to the condition (F2):

- (F2) The agent *A* performs the action *C* spontaneously (autonomously, self-determinatively, by internal principles, by principles originating from him or her).

I have already reproduced above some important passages from Theod. §§287-98, where Leibniz states that freedom requires "spontaneity", accordance to "inner source" and "self-determinacy". I think there is nothing implausible in the claim that some creatures, or in fact *all* substances,²⁰² are self-regulating, even if all creatures, including those with free will, are created by the Creator and are ultimately wholly dependent on him. Even a man-made machine is in quite a natural sense spontaneous or autonomous since the way it works is determined by its internal design. However, perhaps a stronger notion of spontaneity is needed for human freedom.²⁰³

Aulus Gellius (c. 117-80 AD) quotes from Chrysippus (c. 280-207 BC), the most important Stoic philosopher, as follows:²⁰⁴

Just as if you throw a cylindrical stone down a deep slope, you are indeed the cause and origin of its descent, nevertheless the stone afterwards rolls down not

²⁰² See esp. Mon. §§ 11, 18.

²⁰³ "[W]hat is called spontaneity in beasts and in other substances destitute of intelligence, is raised in man to a higher degree of perfection, and is called liberty" (G.7 108, n.d.; English translation in Russell 1900, 193n).

²⁰⁴ From van Arnim's *Stoicorum Veterum Fragmenta* 2.1000; English translation in Inwood & Gerson 1988, 135.

because you are still doing this, but because such is its nature and the 'rollability' of its form; similarly, the order and reason and necessity of fate sets in motion the general types and starting points of the causes, but each man's own will [or decisions] and character of his mind govern the impulses of our thoughts and minds and our very actions.

This is Chrysippus' famous cylinder analogy,²⁰⁵ by means of which he is evidently struggling towards the resolution between freedom and all-embracing "fate" (i.e. all-embracing causation, i.e. the "reason of Zeus"). In Theod. §335 Leibniz utilizes the Chrysippean analogy in the following manner:²⁰⁶

He [Chrysippus] is right in saying that vice springs from the original constitution of some minds. [--] Evil springs [not from the imperfection of matter as Chrysippus suggests but] rather from the *Forms*²⁰⁷ themselves in their detached state, that is from the ideas that God has not produced by an act of his will, any more than he thus produced numbers and figures, and all possible essences which one must regard as eternal and necessary; for they are in the ideal region of possibles, that is, in the divine understanding. God is therefore not the author of essences in so far as they are only possibilities. But there is nothing actual to which he has not decreed and given existence; and he has permitted evil because it is involved in the best plan existing in the region of possibilities [--].

Possibilities have some independence of God,²⁰⁸ for they are as they are (i.e.

²⁰⁵ Discussed also by Cicero in *On Fate* xviii.42-xix.44.

²⁰⁶ With the remark I take as applauding: "if we were sufficiently informed concerning the opinions of ancient philosophers, we should find therein more reason than is supposed."

²⁰⁷ Theod. §87: "Aristotle and the scholastic philosophy after him called *Form* that which is a principle of action and is found in that which acts. This inward principle is [--] substantial, being then termed 'Soul', when it is in an organic body".

²⁰⁸ Leibniz says in *Monadology* and elsewhere, however, that possibilities cannot by any means be regarded as wholly independent of God: Without God there is no possibilities to start with and thus God is ultimately also "the source of essences" (Mon. §43). This view is very clearly expressed in CD §8: "The very *possibility* of things, when they do not actually exist, has a reality grounded in the divine existence: for if God did not exist, there would be no possibility, and possible things are from eternity in the ideas of the divine intellect." See also e.g. PM 76-7 (G.7 310-1, c. 1686-90); PM 140-1 (G.7 305, 1697); Theod. §§ 20, 184, 189, Mon. §§43-5.

as they "are" *sub ratione possibilitatis*). In his understanding God apprehends a certain human character, say, that of Leibniz', as possible, along with all other possibles, and if this character, or the human being, Leibniz, with this character, is lucky enough to be part of the best plan, God makes him existent. However, God's world-creating "decree changes nothing in the constitution of things, and [--] God leaves them just as they were in the state of pure possibility; that is to say that he changes nothing in their essence or nature, or even in their accidents, which are already represented perfectly in the idea of this possible world" (Theod. §52). "For God has seen things in an ideal series of possibles, such as they were to be, and among them man freely sinning. By seeing the existence of this series he did not change the nature of the thing" (CD §104). The conclusion is that God has *not made* our characters as they are (any more than anything else in the world), although he has, by a *fiat*, *created* everything, i.e. given existence for everything that is. Accordingly, human characters are autonomous, spontaneous, self-determining, self-originating and so on.²⁰⁹ The condition (F2) is thus satisfied.²¹⁰

²⁰⁹ As early as 1671 Leibniz writes as follows (L 146 / A.2.1 117): "the essences of things are numbers, as it were, and contain the possibility of beings which God does not make as he does existence, since these possibilities or ideas of things coincide rather with God himself."

Cf. also §14 of the *New System* (PM 122 / G.4 484, 1695), where Leibniz writes as follows: "God has originally created the soul, and every other real unity, in such a way that everything in it must arise from its own nature by a perfect *spontaneity* with regard to itself [--. P]erceptions internal to the soul itself come to it through its own original constitution, that is to say, through its representative nature [--] – this nature having been given it from its creation and constituting its individual character." See also LA 49 (1686).

²¹⁰ Concerning spontaneity (and deliberation), see also WF 220 (G.3 364, 1704); Theod. §§ 34, 300-3, 400; Mon. §17.

4.9 The best of possible worlds

We have seen that many of those innumerable possible plans in God's understanding contain free choices by possible rational beings, and thus, free actions with their consequences. Now, God decides to actualize one of these plans, i.e. he chooses to create or make existent one of possible worlds (with its entire history). Of course, it is the best among these plans: "God has chosen the best possible plan" (L 664 / G.3 581; 1615) – any other outcome is inconceivable, since God is omnipotent and omnibenevolent. "God assuredly chooses the best" (DM §13); "he is determined [although freely so] to choose the best" (NE 179); "God made everything in the greatest perfection of which the universe is capable" (L 218; c. 1678).

There are various factors in the consideration of what is the best among alternative plans, and God carefully weighs them against each other in order to determine which is the best, i.e. which to decree as existent, as we read in Theod. §225:

The wisdom of God, not content with embracing all the possibles, penetrates them, compares them, weighs them one against the other, to estimate their degrees of perfection or imperfection, the strong and the weak, the good and the evil. [-] By this means the divine wisdom distributes all the possibles it had already contemplated separately, into so many universal systems which it further compares the one with the other. The result of all these comparisons and deliberations is the choice of the best from among all these possible systems, which wisdom makes in order to satisfy goodness completely; and such is precisely the plan of the universe as it is. Moreover, all these operations of the divine understanding, although they have among them an order and a priority of nature, always take place together, no priority of time existing among them.

Already earlier, around the time of the *Discourse*, Leibniz had written as follows (PM 76n, G.7 310n; c. 1686):

And so, though it may sometimes happen that the more perfect is excluded by the more imperfect, all in all that method of creating a world is chosen which involves more reality or perfection, and God acts like the greatest geometer, who prefers

the best construction of problems. Therefore all beings [--] exist by the will of God unless they are incompatible with the things which are more perfect.

Leibniz often mentions *greatest variety of phenomena with simplest laws* as a criterion (or rather, a combination of two criteria) for goodness of a possible world or plan.²¹¹ However, since evil and freedom is our present topic, I shall concentrate on these. The amount of evil indeed appears as an important factor in the choice of the best. It is beyond doubt that there are many possible plans (world histories) without evil, or, in any case, with much less evil than there is in the actual world (actualized plan). "It is true that one may imagine possible worlds without sin and without unhappiness" (Theod. §10). However, we may further speculate that God in his wisdom regards it as good that some agents are free, at least to some extent. Of course, due to unavoidable imperfectness of created (or creatable) agents, there will be (or would be) some

²¹¹ See e.g.

DM §§5-6

PM 138 (G.7 303-4, 1697)

Theod. §208

Mon. §58

PNG §10.

(Cf. Rescher 1979 (29-30), Rescher 1996 (148-54), Sleigh 1990 (44-5), Wilson 1989 (284-5).)

For God's choice of the world in general, see also

L 146-7 (A.2.1 117-8, 1671)

PSR 25 (1676)

L 484 (C 530, 1676)

DM §§ 13, 31

LA 18-9

PM 106 (FC 178, c. 1689)

PM 140-1 (G.7 305-6, 1697)

AG 194 (G.3 401; 1707)

Theod. §§ 8, 10, 74, 78, 84, 120, 124, 130, 167, 196, 201, 214, 241-3, 335, 345-7, 350-3,

Summary (Objections 1 and 8)

Mon. §§ 46, 53-5

PNG §11

LC 5.6-9.

corrupt free choices, with bad consequences. Then, as far as free will and evil are concerned, the best possible plan is the one with the optimal *combination* of free will and evil – the latter arising from free rational creatures' exercising their freedom – and this is the actual world God has chosen. The factor of free will is in this way *included* in the consideration of which world is the best. It might be said, roughly, that the created world is even with respect to evil the best possible, *given* a certain amount of freedom of (some) creatures. Thus, Leibniz writes in *Theodicy* as follows (Summary, the second answer to Objection I (H 378 / G.6 377)):

[O]ne must confess that there is evil in this world which God has made, and that it would have been possible to make a world without evil or even not to create any world, since its creation depended upon the free will of God. [-- However,] it was consistent with order and the general good for God to grant to certain of his creatures the opportunity to exercise their freedom, even when he foresaw that they would turn evil.

4.10 The problem of evil

All pieces fall into their places in Leibniz' theory. The actual world is the plan that has come into existence by God's decrees. Its total history, from the beginning to the end, unfolds exactly according to this plan, which is to say, under God's close providence – and God of course foreknows this world through and through.²¹² Nevertheless, there are human free decisions or exercises of human free will in the actual world – they are just contained in the actualized plan, or they in part *make* this plan such as it is. This solves the problem of free will, with regard to God's providence (and foreknowledge). But our actual world is not just the realization some plan containing free human actions – it is the best of all possible plans. It is true that there are possible worlds (plans) with less evil, perhaps even worlds with no evil at all.

²¹² Moreover, he also knows in this way all unactualized plans, i.e. what would have happened had he actualized any other plan.

However, in these plans there is less human freedom than in the actual world, or perhaps no such freedom at all. The actual world is the best combination of free will and evil (or the best combination of whatever factors, besides these mentioned two, God regards as relevant) – it is the solution of a two-variable (or n -variable) optimization problem.

To repeat, the problem of evil is now accounted for by means of *free will defense* as follows: Evil arises from exercises of free will and action, but the freedom of some agents is considered by God a thing so precious that a certain amount of evil just must be tolerated (and in fact even supported by the divine *concursum*). The usual argument from evil against the existence of God is due to one-sided consideration on evil alone – it contains the mistake of taking only evil into account. The cause of evil, it may now be insisted, is just a misused gift from God, viz. free will. The following statement by Leibniz in the preface of *Theodicy* (H 61 / G.6 37) is thereby explained:

[I]t has been possible for God to permit sin and misery, and even to co-operate therein and promote it, without detriment to his holiness and his supreme goodness, although generally speaking, he could have avoided all those evils.

As a final test case, let us consider the following simple and natural-looking question: Since God has always miracles at his disposal, why does he not use them to prevent at least some great evils of the world from happening? The answer is, of course, that full consideration on the use of miracles is already included in the Plan (or in fact in all plans). If there are miracles in the world they are of course originally in the Plan – it is absurd to think that the Creator utilizes miracles as it were *ex tempore*; this would mean that there are situations he did not foresee. The reason for there being so few miracles is perhaps that they would often be infringements of the created free will, human or non-human.²¹³

²¹³ For Leibniz on miracles, see for instance DM §§ 6-7, 16-7; LA 51f.; WF 82 (G.4 521, 1698); Theod. §53-4; LC 3.17, 4.44, 5.107f.

Concerning *natural evil*, like avalanches and hurricanes, which perhaps cannot entirely be explained away by human free decisions, it has been suggested²¹⁴ that Satan and his cohorts, having free will, are responsible for them. This is in accord with what Leibniz says in Theod. §275: "it is written in the book of eternal truths, which contain all possibilities prior to any decree of God, that if he [the devil] were once created he would freely turn to evil."

²¹⁴ E.g. by Alvin Plantinga 1967, 1974[b].

5 Highlights

In this final chapter, I shall briefly review some of the main points of this essay, and perhaps even add a point or two. In chapter 2 I put forward the doctrine according to which truths and falsehoods are not only timeless but also worldless, or independent of not only time but also possible worlds. From this worldless and timeless point of view, nothing changes. Even so-called empirical objects have all their properties "at once" (to consider only the dimension of time) – the selfsame object may be, say, red-at- s and blue-at- t , where s and t are moments of time. This vantage point may be justified by means of knowledge and belief in the following manner: When you know or believe, say, that somebody is bald, you do not know or believe that he or she is bald, as it were, contextlessly, but is bald in a fixed context or circumstance, including that of time and the world; what is known or believed is something that may have a truth value; thus, what has a truth value is fixed with respect to world and time.²¹⁵ For example, if the person c is not bald at s but is bald at t , I say, from the atemporal point of view, that c "all at once" (timelessly) lacks s -baldness and has t -baldness. If you know both that c is s -nonbald and is t -bald, your knowledge is about something unchanging: c is just as steadily s -nonbald as he is t -bald (and there is no such thing as c 's being s -bald). The case of alethic stability is entirely analogous.

Truths and falsehoods are not only worldless but also (sort of) necessary, and

²¹⁵ This is my version of the ancient Greek conception of knowledge, recorded very explicitly by Aristotle in the following passage: "The supporters of the ideal theory were led to it because they were persuaded of the truth of the Heraclitean doctrine that all sensible things are ever passing away, so that if knowledge or thought is to have an object, there must be some other and permanent entities, apart from those which are sensible; for there can be no knowledge of things which are in a state of flux" (*Metaphysics* XIII.4, 1078b12-7; see also e.g. 1079a9-11, 1086a36-b6, 1086b32-6, 1987a9-16).

not only timeless but also (sort of) sempiternal: The truth that, say, c is actually bald now is a truth with respect to every moment of time and every world. Nevertheless, there is alethic and temporal contingency. The simple explanation for this is that items that should be taken as true or false – which I call, after Frege, Gedanken – are different in type from items that should be taken as having a temporal or alethic status (in the genuine sense): What may have a truth value is an object (in some liberal sense of the term "object"), while what may be necessary or possible is a function.

I offer my discussion of changelessness (in section 2.12) as an account of the claim frequently made in the history of philosophy, that change is unreal: To repeat, from the point of view of what is true or false, nothing changes; if it is true of an object that it is, say, (actually) an F at t , it never was or will be true to say of it that it is not (actually) an F at t , for it is unchangeably (actually) an F at t .

Moreover, I think the proposed relatively uncomplicated Fregean approach involving not only timelessness but also in general worldlessness of truths and falsehoods, and subsequently involving commitment to changelessness, is to be identified with the traditional theological conception of God's extramundaneity and immutability (outside-worldness and timelessness). Truths are stable and unchanging – and even the world is so, from the eternalist point of view outlined above. This, I submit, is God's timeless and worldless (or extramundane) vantage point, the consideration of everything *sub specie aeternitatis*. Accordingly, there is a relatively clear sense in which not only God but also the world is immutable or still-standing, which, I think, might be taken as an instance of the view of many past theologian-philosophers that the world should not be regarded as something separate from God but as something "in God".²¹⁶

²¹⁶ I do not claim to have a particularly solid grounds for all these traditional metaphysical contentions – nevertheless, I think my approach at least offers a simple way to appreciate them.

My treatment, in chapter 3, of what is known as logical determinism – originating from Aristotle's discussion of future contingents – may be seen both as an important application of the approach of chapter 2 and as a historical prologue to the issue of theological determinism. One answer to the allegation that logical considerations (involved in the problem of future contingents) and God's supposed foreknowledge as well as his providential control all lead to determinism is in the end simply the following. When we say temporally that something *will be*, we may just as well say atemporally that it *is*. For instance, the true belief that a sea-battle *will begin* (temporal predication) tomorrow at noon just is the belief, alternatively put, that a sea-battle *tomorrow-at-noon-begins* (atemporal predication) – and this belief concerns, of course, the actual world (so that the belief in question is, strictly speaking, to be expressed by "a sea-battle *actually-tomorrow-at-noon-begins*"). Roughly, the problem arises out of mistaking a timeless predication for a temporal one.

Finally, in chapter 4 I discuss the relation between theologically-based determinism and human free will. After reviewing some relevant views of St. Augustine, Boethius and St. Thomas Aquinas, I consider especially Leibniz' account – which is a version of soft determinism – according to which the created world is indeed deterministic but there is still free will, since there are (absolutely) contingent rational autonomous choices, in the sense explained in section 4.8.²¹⁷ Leibniz carefully navigates between determinism (in a repugnant sense) and free will, and at the same time satisfactorily resolves the intricate problem of how God can know the future (under the assumption of human free will) as well as the ancestral problem of evil.

²¹⁷ Apparently, in his well-known *Critical Exposition* a century ago, Bertrand Russell did not have the slightest idea of what Leibniz' compatibilist account of free will is, and, as far as I can see, this lack of appreciation continues even today. (See section 1.1 above for some references to recent literature.)

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