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THE

WORKS

OF THE

RIGHT REVEREND FATHER IN GOD,

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LATE LORD BISHOP OF

BATH AND WELLS.

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A CALCULATION OF THE CREDIBILITY OF HUMAN TESTIMONY.

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A
CALCULATION
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HUMAN TESTIMONY.

MORAL Certitude Absolute is that in which the Mind of Man entirely acquiesces, requiring no further Assurance: As if one, in whom I absolutely confide, shall bring me word of 1200l accruing to me by Gift, or a Ship's Arrival; and for which therefore I would not give the least valuable Consideration to be enured.

Moral Certitude Incomplete has its several Degrees to be estimated by the Proportion it bears to the Absolute. As if one, in whom I have that degree of Confidence, as that I would not give above One in Six to be enured of the Truth of what he says, shall inform me, as above, concerning 1200l: I may then reckon that I have as good as the Absolute Certainty of a 1000l; or Five Sixths of Absolute Certainty for the whole Sum.

The Credibility of any Reporter is to be rated (1) by his Integrity, or Fidelity; and (2) by his Ability: and a double Ability is to be considered; both that of Approbending what is delivered; and also of Retaining it afterwards, till it be transmitted.

"What follows concerning the Degrees of Credibility is divided into Four Propositions. The Two First respect the Reporters of the Narrative, as they either Transmit Succeedingly, or Attest Concurrenly: the Third, the Subject of it, as it may consist of several Articles; and the Fourth joins those three Credibilities together, exemplifying them in Oral and in Written Tradition.

This Translated, though first published by the Author some Years after the Disputes in Lecce, is now placed before you, on account of the relation it has to the foregoing Disquisitions on Infallibility, where the same sort of Calculation is made use of, to show the Uncertainty of Oral Tradition. See Leg. 1. Chap. IV. sec.
A Calculation of the Credibility, &c.

PROPOS. I.
Concerning the Credibility of a Report, made by Single Successive Reporters, who are equally Credible.

Let their Reports have, each of them, Five Sixths of Certainty; and let the First Reporter give me a Certainty of a 1000l. in 1200l; it is plain that the Second Reporter, who delivers that Report, will give me the Certainty but of \( \frac{2}{3} \text{ths} \) of that 1000l, or the \( \frac{2}{3} \text{th} \) of \( \frac{2}{3} \text{ths} \) of the full Certainty for the whole 1200l. And so a Third Reporter, who has it from the Second, will transmit to me but \( \frac{2}{3} \text{ths} \) of that Degree of Certainty, the Second would have delivered me, &c.

That is, if, \( a, b, c \) be put for the Share of Assurance a Single Reporter gives me; and, \( d \), for that which is wanting to make that Assurance complete; and I therefore suppos'd to have \( \frac{a}{d + b + c} \) of Certainty from the First Reporter; I shall have from the Second, \( \frac{d}{d + b + c} \); from the Third, \( \frac{c}{d + b + c} \).

And accordingly, if, \( a, b = 100 \); and \( c = 6 \), (the number of Pounds that an 100l. put out to Interest, brings at the Year's end; and consequently my Share of Certainty from One Reporter, be \( \frac{100}{106} \); which is the present Value of any Sum to be paid a Year hence: The Proportion of Certainty coming to me from a Second, will be \( \frac{100}{106} \) multiplied by \( \frac{100}{106} \) (which is the present Value of Money to be paid after Two Years;) and that from a Third-hand Reporter, \( \frac{100}{106} \) thrice multiplied into itself; (the Value of Money payable at the end of Three Years,) &c.

Corollary.

And therefore, as at the Rate of 6 per Cent Interest, the present Value of any Sum payable after Twelve Years, is but Half the Sum: So if the Probability or Proportion of Certitude transmitted by each Reporter, be \( \frac{1}{2} \); the Proportion of Certainty after Twelve such Transmissions, will be but as a Half; and it will grow by that Time an equal Lay, whether the Report be true or no. In the same manner, if the Proportion of Certainty be set at \( \frac{100}{106} \), it will come to a Half from the 70th Hand: And if at \( \frac{100}{106} \), from the 695th.

PROPOS. II.
Concerning Concurrent Testifications.

If Two Concurrent Reporters have, each of them, as \( \frac{1}{3} \text{ths} \) of Certainty; they will both give me an Assurance of \( \frac{1}{3} \text{ths} \), or of 35 to one: If Three; an Assurance of \( \frac{1}{3} \text{ths} \), or of 21 5 to one. For
A Calculation of the Credibility, &c.

For if One of them gives a Certainty for 12001, as of $\frac{a}{a+c}$; there remains but an Assurance of $\frac{a}{a+b}$, or of 200/ wanting to me, for the whole. And towards that the Second Attested contributes, according to his Proportion of Credibility: That is, to $\frac{a}{a+b}$ of Certainty before had, he adds $\frac{a}{a+b}$ of the $\frac{a}{a+b}$ which was wanting: So that there is now wanting but $\frac{a}{a+b}$ of a $\frac{a}{a+b}$, that is $\frac{a}{a+c}$; and consequently I have, from them both, $\frac{n}{n+a+b}$ of Certainty. So from Three, $\frac{n}{n+a+b}$, &c.

That is, if the First Witness gives me $\frac{a}{a+c}$ of Certainty, and there is wanting of it $\frac{a}{a+c}$; the Second Attested will add $\frac{a}{a+c}$ of that $\frac{a}{a+c}$; and consequently leave nothing wanting but $\frac{a}{a+c}$ of that $\frac{a}{a+c}$.

And in like manner, the Third Attested adds his $\frac{a}{a+c}$ of that $\frac{a}{a+c}$, and leaves wanting only $\frac{a}{a+c}$, &c.

Corollary.

Hence it follows, that if a Single Witness should be only so far Credible, as to give me the Half of a full Certainty; a Second of the same Credibility would (joined with the First) give me $\frac{a}{a+c}$; a Third, $\frac{a}{a+c}$, &c.: So that the Coatefsation of a Tenth would give me $\frac{a}{a+c}$ of Certainty; and the Coatefsation of a Twenty-first, $\frac{a}{a+c}$, or above Two Millions to One, &c.

PROPOS. III.

Concerning the Credit of a Reporter for a Particular Article of that Narrative, for the whole of which he is Credible in a certain Degree.

LET there be Six Particulars of a Narrative equally remarkable: If he, to whom the Report is given, has $\frac{a}{a+c}$ of Certainty for the whole, or Sum, of them; he has 35 to one, against the Failure in any One certain Particular.

For he has Five to One, there will be no Failure at all: And if there be; he has yet another Five to One, that it falls not upon that single Particular of the Six. That is, he has $\frac{a}{a+c}$ of Certainty for the whole: and of the $\frac{a}{a+c}$ wanting he has likewise $\frac{a}{a+c}$, or $\frac{a}{a+c}$ of the whole more; and therefore that there will be no Failure in that single Particular, he has $\frac{a}{a+c}$ and $\frac{a}{a+c}$ of Certainty, or $\frac{a}{a+c}$ of it.

In General, if $\frac{a}{a+c}$ be the Proportion of Certainty for the whole; and $\frac{n}{n+a+c}$ be the Chance of the rest of the particular Articles $n$, against some one, or more of them $n$; there will be nothing wanting to an absolute Certitude, against the not failing in Article, or Articles, $n$, but only $\frac{a}{a+c}$.
PROP OS. IV.
Concerning the Truth of either Oral or Written Tradition, (in Whole, or in Part,) Successively transmitted, and also Coattessed by several Successions of Transmitters.

(1) SUPPOSING the Transmussion of an Oral Narrative to be so performed by a Succession of Single Men, or joined in Companies, as that each Transmussion, after the Narrative has been kept for Twenty Years, impairs the Credit of it a 1/12th part; and that consequently at the Twelfth Hand, or at the end of 240 Years, its Certainty is reduced to a Half; and there grows then an even Lay (by the Corollary of the first Proposition) against the Truth of the Relation: Yet if we further suppose, that the same Relation is Coattessed by Nine other several Successions, transmitting alike each of them; the Certainty of it, when they are all found to agree, will (by the Corollary of the second Proposition) be as 9/10 of Certainty, or above a Thousand to One; and if we suppose a Coattestation of Twenty, the Certainty of it will be, as above Two Millions to One.

(2) In Oral Tradition, as a Single Man is subject to much Casualty, so a Company of Men cannot be so easily suppos'd to join; and therefore the Creditibility of 1/2 of 1/2, or about 1/4 of 1/4, may possibly be judged too high a Degree, for an Oral Conveyance, to the Distance of Twenty Years. But in Written Tradition, the Chances against the Truth or Convergence of a single Writing are far less; and several Copies may also be easily suppos'd to concur; and thence, since the Invention of Printing, exactly the same: several also distinct Successions of such Copies may be as well suppos'd, taken by different Hands, and, preferred in different Places or Languages.

And therefore if Oral Tradition by any one Man or Company of Men might be suppos'd to be Credible, after Twenty Years, at 1/2 of Certainty; or but 1/4; or 1/16; a Written Tradition may be well imagined to continue, by the Joint Copies that may be taken of it for one Place, (like the several Copies of the same Impression,) during the space of a 100, if not 200 Years; and to be then Credible at 1/2 of 1/2 of Certainty, or at the Proportion of a Hundred to One. And then, seeing that the Successive Transmissions of this 1/2 of Certainty will not diminish it to a Half, until it passes the Sixty ninth Hand; (for it will be near Seventy Years, before the Rebate of Money, at that Intereft, will sink it to Half:) It is plain, that Written Tradition, if preferred but by a Single Succession of Copies, will not lose Half of its full Certainty, until Seventy times a Hundred (if not Two Hundred) Years are past; that is, Seven Thousand, if not Fourteen Thousand.
A Calculation of the Credibility, &c.

Thousand Years. And further, that, if it be likewise preserved by Concurrent Successions of such Copies, its Credibility at that Distance may be even increased, and grow far more certain from the several agreeing Deliveries at the end of Seventy Successions, than it would be at the very first from either of the Single Hands.

(3) Lastly, In stating the Proportions of Credibility for any Part or Parts of a Copy, it may be observed, that in an Original not very long, good Odds may be laid by a careful Hand, that the Copy shall not have so much as a Literal Fault: But in one of greater Length, that there may be greater Odds against any Material Error, and such as shall alter the Sense; greater yet, that the Sense shall not be altered in any Considerable Point; and still greater, if there be many of these Points, that the Error lights not upon such a single Article; as in the Third Proposition.

FINIS.