

## Daniel and the Control

Michael Witty

Tradition cites Roger Bacon as the first experimenter with a Control<sup>1</sup>, though Bacon may have only *written* about the control in part six of the *Opus Majus* (1266 AD), but not experimented himself. This tradition is contradicted in my previous paper<sup>2</sup> where I described details and context for a much *earlier* experiment with a Control which is described by the Roman era Greek, Athenaeus<sup>3,4</sup> (late 2nd to early 3rd century AD). In this paper I foolishly omitted mention of the *earliest* known experiment with a Control Group i.e. the experiment found in The Book of Daniel<sup>5</sup> which describes events during the reign of Nebuchadnezzar II (605 BC - 562 BC) but was probably composed in the Hellenistic period of Judaism (2nd-century BC). This is relevant to my previous paper regarding the interrogation of nature which we call an experiment because comparisons are extremely valuable, especially between Treatments and an explicit contemporaneous Control. However, most experiments, throughout history, are limited to comparisons between what happened at the time of the experiment and what happened previously. What happened on one day, compared to what happened last week or last year when the same activity was attempted i.e. a Natural

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<sup>1</sup> McKeon, R. P. (1980), p34.

<sup>2</sup> Witty, M. (2020).

<sup>3</sup> Gulick, C. (1927), 3.84.d-f.

<sup>4</sup> Olson, S. D. (2010).

<sup>5</sup> Daniel 1, 8-16.

Experiment. The trouble with Natural Experiments is that they rely on frail human memory to make comparisons. The Controlled Experiment allows better understanding because the results of Treatments and Controls can be seen side by side, at the same time, and easier comparisons made.<sup>6</sup> To complete my paper<sup>2</sup> I wish to briefly describe Daniels's Experiment in the new context of Athenaeus because it is imperfectly written of in other places.

Daniel and his three companions were Jews taken into Babylonian captivity that represent the remnant diaspora of subjugated Judaism.<sup>7</sup> They were obliged to conform to the wishes of their captors which included compulsory study of the language and literature of the Chaldeans, service to the King (Nebuchadnezzar), adoption of new names and to eat fine food by instruction from the King. However, this food was possibly not Kosher or was the product of pagan sacrifice and therefore profoundly objectionable to Daniel and his companions. It was possibly the last straw in this series of humiliating burdens which contradicted Judaism. To resist<sup>8</sup> this and to assert his constancy to Jewish Law, Daniel requested Melzar the Steward to allow him food consistent with Mosaic Law. Because this was against Melzar's instructions he had to be convinced through use of an experiment, which let him know he would avoid trouble with the King that could come from malnourishing the Jewish captives. This is the experiment<sup>8</sup>:

But Daniel purposed in his heart that he would not defile himself with the portion of the king's delicacies, nor with the wine which he drank; therefore he requested of the chief of the eunuchs [Ashpenaz] that he might not defile himself.<sup>9</sup> Now God had brought Daniel into the favor and goodwill of the chief of the eunuchs.<sup>10</sup> And the chief of the eunuchs said to Daniel, "I fear my lord the king, who has appointed your food and drink. For why should he see your faces looking worse than the young men who are your age? Then you would endanger my head before the king".<sup>11</sup> So Daniel said to the steward [Melzar] whom the chief of the eunuchs had set over Daniel, Hananiah, Mishael, and Azariah<sup>12</sup>, "Please test your servants for ten days, and let them give us vegetables to eat and water to drink.<sup>13</sup> Then let our appearance be examined before you, and the appearance of the young men who eat the portion of the king's delicacies; and as you see fit, so deal with your servants".<sup>14</sup> So he consented with them in this matter, and tested them ten days.<sup>15</sup> And at the end of ten days their features appeared better and fatter in flesh than all the young men who ate the portion of the king's delicacies.<sup>16</sup> Thus the steward took away their portion of delicacies and the wine that they were to drink, and gave them vegetables.<sup>9</sup>

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<sup>6</sup> Popper, K. (1959).

<sup>7</sup> Efron, J. (1987), p98.

<sup>8</sup> Coogan *et al* (2007), 1254-1255.

<sup>9</sup> Daniel 1, 8-16.

This is a good experiment, even by modern standards, because it has so many of the criteria required by scientists of the 21st century.<sup>10</sup> These include: an introduction; a hypothesis which is that eating a Kosher diet of vegetables and water will be visibly more healthy than the diet of delicacies and wine, within 10 days; an experimental methodology of two groups with two different diets to test the hypothesis; a control in addition to the experimental group so that comparisons are easy; a definite result which is a clear and convincing difference in the appearance of the experimental group and control, which can be attributed easily to diet; a conclusion which is to allow the Jews their Kosher diet; all in the context of a convincing philosophical system which resembles a concise science report. This shows that the concept of Controlled Experiments was known in both Hellenistic and Hebrew literature<sup>7</sup>, though we know very little of everyday practice by technical people.<sup>11,12</sup> *Homo est certus animalis experimentalis*.

Michael Witty

*Florida SouthWestern State College*

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<sup>10</sup> Treece, J.R. (1990).

<sup>11</sup> Witty, M. (2016).

<sup>12</sup> Witty, M. (2018).

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