Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
Variety of instances

Some notes:

(3.21)

...
"It does not seem poss. to assign a quantitative value to the dept. of conf. of a Mr. ... If degrees of conf. could be quantized, all degrees of conf. would be comparable & be capable therefore of a linear ordering. That this does not seem to be the case is suggested by the fully hypoth. situation. Suppose that the positive instances for [a theory] T can be analyzed into two non-overlapping classes K₁, K₂ such that the instances in K₁ come from one field of inquiry & those in K₂ from another field. For e.g., if T is the Newtonian Mr., K₁ may be the confirmatory instances for it from the study of planetary motions, while K₂ may be those coming from the study of capillary phenomena."
Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.

\[ M(E) \sim M'(E) \sim M''(E) \sim M'''(E) \]

\[ \text{Instanz Konfirmation} \]

\[ (M, M_2, E) \sim (M_1, M_2, E) \]

\[ \text{Item 1} \]

\[ 1. \text{A} \]

\[ 2. \text{B} \]

\[ \text{Skelet Prob.} \]

\[ \text{über N*} \]

\[ \text{2. Art von Gesetzen} \]

\[ \text{Instanz Konfirmation} \]

\[ \text{Item 1} \]

\[ 1943-1944 \]

Box 79a, Folder 8a

Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
N1. "These nine possibilities [(X₁ to X₉)] are arranged in order of increasing number of positive instances. Would we say, however, that this order also represents the order of increasing degrees of confirm?" Obviously not. (I agree.)

N2. "It would generally be granted that for both X₂ and X₃, the degree of confirm is greater than for X₁ simply because of the total number of positive instances." (I agree.)

N3. "On the other hand, many scientists would be inclined to assign a greater degree of confirm to X₂ than to X₃ [that is, to the th. T in the case X₂ than in X₃], even though the total number of positive instances is the same in these cases."

(Degree, e [much greater degree].)

And the reason they would give is that in X₂ there are different kinds of facts, while in X₃ there is only one kind."
N4. "For this reason also, if $X_6$ would be assigned a higher degree of conf. [to $T$] than $X_7$, even though the total number of pos. insts in the former case is less than in the latter case."

(1 degree, a very much greater degree.)

N5. "Again, $X_4$ & $X_5$ would often be assigned the same degree of conf. even though the total number of insts is diff. in these cases, because the relative number of insts of each kind is approximately the same."

(1 should say that the degree of conf. is approximately the same in these cases but is clearly higher in $X_5$ than in $X_4$ because $X_5$...
Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
No. Finally, $X_3$, $X_9$ would often be regarded as inseparable with respect to their degrees of confidence, because of the disparity in the relative number of different kinds of insts. Since there is the same total number of insts in these two cases, their comparison will be based on simply a comparison of the distribution of these insts among the two kinds $K_1$ and $K_2$. Now, in $X_9$ nearly all insts belong to one kind; thus the rule of variety is, though not entirely disregarded, yet fulfilled to a very small extent only. On the other hand, the distribution in $X_9$ is nearly even; the instances are evenly divided between the two kinds; hence the distribution is very good. Therefore, in accordance with Nagel’s own emphasis on the rule of variety, I should expect a scientist to
assign a considerably higher degree of confidence in the case \( X_9 \) than in \( X_g \). I think that the kind of cases is not. Observe 2: \( X_9 \) is even not 1\% of \( X_g \) whereas \( X_g \) is 5\% of \( X_9 \). Conclusion:

\[
X_9 = 5\% \text{ of } X_g \text{ (} X_9 , \text{ or } X_g \text{, not } X_8 \).
\]

N7. "A large increase in the number of pos. insts. of one kind may ... count for less, in the judgment of skilled experimenters, than a small increase in the number of pos. insts. of another kind." (I agree.)

\[
X_9 \frac{1}{X_9} X_2 \frac{1}{X_2} \text{ etc. etc., i.e. etc. etc., etc. etc. etc.}
\]
We have a variety of insts. One of which is: "Variety in the kinds of pos. insts. for a Th. is a very acknowledged factor in estimating the weight of the evidence. The reason for this is that experiments which are conducted in qualitatively diff. domains make it easier to control features of the Th. whose relevance in any of the domains may be in qm. ... In this way ... the Th. is subject to a more searching examn. than if all the pos. insts. were drawn from just one domain." Then the sent. quoted above as N7 follows.

"It follows, however, that the degree of confirm. for a Th. seems to be a function not only of the abs. number of pos. insts. but also of the kinds of insts. and of the rel. number in each kind."

Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
It is not in gen. poss., therefore, to order degrees of confirmation in a linear order, because the evidence for this may not be comparable in accordance with a simple linear schema; and a fortiori degrees of confirmation cannot, in gen., be quantized.
Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
<table>
<thead>
<tr>
<th>$M_1$</th>
<th>$M_2$</th>
<th>$M_3$</th>
<th>$M_4$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$M_{11}$</td>
<td>$M_{12}$</td>
<td>$M_{13}$</td>
<td>$M_{14}$</td>
</tr>
<tr>
<td>$M_{21}$</td>
<td>$M_{22}$</td>
<td>$M_{23}$</td>
<td>$M_{24}$</td>
</tr>
<tr>
<td>$M_{31}$</td>
<td>$M_{32}$</td>
<td>$M_{33}$</td>
<td>$M_{34}$</td>
</tr>
<tr>
<td>$M_{41}$</td>
<td>$M_{42}$</td>
<td>$M_{43}$</td>
<td>$M_{44}$</td>
</tr>
</tbody>
</table>

\[ \phi \]

\[ \phi \times \psi \quad (M_1 : M_2 \land M_3 : M_4) \land \neg \phi \]

Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
\[
\frac{m^*(x^*)}{(x^*-1)} = \frac{m^*(x^*)}{[(x^*-1)!]} \left( \sum_{k=0}^{x^*} \frac{(x^*-2)_k}{(x^*-1)_k} \right)
\]

\[
\int \frac{dx^*}{\left( \sum_{k=0}^{x^*} \frac{(x^*-2)_k}{(x^*-1)_k} \right)} = \frac{m^*(x^*)}{(x^*-1)}
\]

\[
m^*(x^*) = c^5
\]
Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.

\[
\left( \sum_{i=1}^{n} a_i \right) \times 2^n = n \times 2^n
\]
\[
\frac{1}{R} = \frac{1}{V^*(c, k^* x, j)}
\]

\[
V^*(i, k^* x, j, l) = 1 - (T^2 - \ldots). \quad m = 45 - 25 b.
\]

\[
d_1 \cdot R = \frac{10}{(q_{s_2} + q_{s_x} + q_{m_1} + q_{m_2} - 1)! (q_{s_2} + q_{m_1} - 1)! (q_{s_2} + q_{m_2} - 1)!}
\]

\[
= \frac{1}{10} \left[ \left( q_{s_2} + q_{s_x} + q_{m_1} + q_{m_2} - 1 \right)^{q_{m_1}} \right]
\]

\[
= \left( \frac{q_{s_2} + q_{s_x} + q_{m_1} + q_{m_2} - 1}{q_{m_1}} \right)
\]

\[
d_2 \cdot \text{C ile}\ (d_1): \quad c = 2, q, \quad q_{m_1} = q_{m_2} = 1. \quad R = \prod_{q=1}^{q_{s_2} + q_{s_x} + 1}
\]

\[
= \left( \frac{q_{s_2} + q_{s_x} + 1}{q_{s_2} + 1} \right)
\]
\[ \forall \psi \in \mathcal{A}(q): (\frac{m}{p}) + (\frac{m-1}{p}) + (\frac{m-2}{p}) + \ldots + (\frac{p}{p}) = \frac{m+n}{m-p} \]

\[ \frac{n-1}{w-1} \frac{(n+w)!}{(n-1)!(n+w-n)!} = \frac{n-1}{w-1} \frac{(n+w)!}{n!w!} \]

\[ \forall \psi \in \mathcal{A}(q): (\frac{m}{p}) \]

\[ \omega \in \mathcal{A}(\psi) \]

\[ \forall \psi \in \mathcal{A}(q): (\frac{m}{p}) (M(x)w) \]

\[ \forall \psi \in \mathcal{A}(q) \]

\[ \omega \in \mathcal{A}(\psi) \]

\[ \forall \psi \in \mathcal{A}(q): (\frac{m}{p}) (M(x)w) \]

\[ \forall \psi \in \mathcal{A}(q) \]

\[ \omega \in \mathcal{A}(\psi) \]
Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.

\[ d_\iota \cdot \gamma_{\xi} (\hat{l}, \hat{k}, j, \iota) = \gamma_{\xi} (\hat{l}, \hat{k}, \hat{j}, \iota). \]
\[ R \cdot \gamma_{\xi} (\hat{l}, \hat{k}, j, \iota) \cdot \gamma_{\xi} (\hat{l}, \hat{k}, j, \iota). \]
\[ (\xi_0, \iota_0, j, \iota_0) \cdot \gamma_{\xi} (\hat{l}, \hat{k}, j, \iota) \cdot \gamma_{\xi} (\hat{l}, \hat{k}, j, \iota). \]
\[ \sim \]
Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
\[ (T_{\lambda - 190}). f. (c_i. 2 \neq c_j^*). x \neq 0. (z, 1). M_{x^*_2}. \]
Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
\[ R_{k+1} \leq \frac{(q', s_{k} + q'_{, m} + q'_{, m_k}) - (q'_{, s_{k}} + q'_{, m} + q'_{, m_k})}{(q'_{, s_{k}} + q', s_{k} + q'_{, m} + q'_{, m_k})}
\]
\[ = \frac{(q'_{, s_{k}} + q', s_{k} + q'_{, m} + q'_{, m_k}) (q'_{, s_{k}} + q'_{, m} + q'_{, m_k}) - (q'_{, s_{k}} + q'_{, m} + q'_{, m_k})}{(q'_{, s_{k}} + q', s_{k} + q'_{, m} + q'_{, m_k}) - (q'_{, s_{k}} + q'_{, m} + q'_{, m_k})}
\]
\[ = \frac{q'_{, m} (q'_{, s_{k}} + q'_{, m} + q'_{, m_k})}{q'_{, s_{k}} + q'_{, m} + q'_{, m_k}}
\]
\[ e'_{, s_{k}} q'_{, s_{k}} + q'_{, m} + q'_{, m_k} > 0,
\]
\[ \therefore 1 \leq R_{k+1} < R_k.
\]


Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.
Box 79a, Folder 8a
Rudolf Carnap Papers, 1905-1970, ASP.1974.01, Special Collections Department, University of Pittsburgh.

(1) \( \forall x \forall y (x \geq y \cdot x \leq y) \)

(2) \( \forall x \forall y (x \geq y \cdot x \leq y) \)

(3) \( \forall x \forall y (x \geq y \cdot x \leq y) \)
Cycle \((e)\) : 

\[
(\text{TN-190}) \quad i, i'' - 0 (e) \quad 1 \leq e \leq (i, 5', 1) + 2 \quad e_i', f_n \quad (n \geq 0, n \geq 1) \quad \text{and} \quad s_i' = s_i' + 2n + n'.
\]

\[
f_i' = f_i' + n + n' \quad (i \leq e < f_n \quad \text{and} \quad e < f_n).
\]

\[
i, s_i' = s_i' + n = s_i' + n + n' \quad \text{and} \quad s_i'' = s_i'' + n.
\]

\[
1, 2, \ldots, n \quad \text{for} \quad n \in \mathbb{N}.
\]

\[
\begin{align*}
\binom{\lambda, k, j, i}{(e)} &= \frac{(s_i + s_i' + 2n + n' + m_i + m_i - 1)!(s_i + s_i' + 2n + n' + m_i + m_i - 1)!
}{(s_i + s_i' + 2n + n' + m_i + m_i - 1)!(s_i + s_i' + 2n + n' + m_i + m_i - 1)!}
\end{align*}
\]