Little Oxford English Dictionary and the Graphical law

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Abstract
We study the Little Oxford English Dictionary. We draw the natural logarithm of the number of entries and headwords normalised, respectively, starting with a letter vs the natural logarithm of the rank of the letter, normalised as well as unnormalised. We observe that the plots of the entries and the headwords are almost the same. We find that the entries and the headwords underlie a magnetisation curve of a Spin-Glass in presence of little external magnetic field.
I. INTRODUCTION

English is the most spoken language, used as lingua-franca by many all over the world, enriching the language as well as getting enriched by the language. Interactions of the English language with other languages of Europe is an interesting subject of its own. Apparently, above half of the vocabulary has come from Latin. We have studied two languages from Europe recently. One is Romanian. Another is Basque. Both exhibit almost the same features in our analysis. Romanian is known to be a Romance language, off-shoot of spoken Latin. Basque, from our analysis, appears to be a Romance language, in all practicality. What about the English language from our perspective? To go into that topic, we have started with the Little Oxford English Dictionary, \textsuperscript{[1]}. There are all types of entries or, entries or, generalised words and headwords. We count all the entries letter by letter, followed by enumeration of headwords letter by letter.

In the preliminary study, \textsuperscript{[2]}, the present author has gone into probing the word (and verb, adverb, adjective) contents along the letters in a language. The letters were arranged in ascending order of their ranks from the rank one. The letter with the highest number of words starting with, was taken as of rank one. For a natural language, a dictionary from it to English, was a natural choice for that type of study. The author has found that behind each language which was subjected to investigation, there is a curve of magnetisation. From that the author has conjectured that behind any written natural language there are curves of magnetisation, for words, verbs, adverbs and adjectives respectively. A preliminary study of Webster’s English dictionary was also undertaken. The graphical law was found to exist in the contemporary Chinese usages, \textsuperscript{[2]}, also.

Moreover, we looked into, \textsuperscript{[3]}, dictionaries of five disciplines of knowledge and found existence of a curve magnetisation under each discipline. This was followed by finding of graphical law behind the Bengali language, \textsuperscript{[4]}, the Basque language \textsuperscript{[5]}. This was pursued by finding of graphical law behind Romanian, \textsuperscript{[6]}, five more disciplines of knowledge, \textsuperscript{[7]}, Onsager core of Abor-Miri, Mising languages, \textsuperscript{[8]} and Onsager Core of Romanised Bengali language, \textsuperscript{[9]} respectively.

We describe how a graphical law is hidden within in the Little Oxford English Dictionary, in this article. We organise the paper as follows. We explain our method of study in the section IV after giving an introduction to magnetisation and the the standard curves of
magnetisation of Ising model in the sections II and III respectively. In the ensuing section, section V, we narrate our graphical results. We describe how natural logarithm of number of generalised words or, all entries arranged in descending order, normalised by different normalisers when plotted against the respective rank are fit with lines of magnetisations. Then we conclude about the existence of the graphical law. The same thing is carried on for the headwords. The section VI is Discussion. In that section we try to find out relationship of the English language, on the basis of the Little Oxford English Dictionary, with other languages on the basis of underlying magnetisation curves. We end up through acknowledgement section VII and bibliography.

II. MAGNETISATION

The two dimensional Ising model, \([10]\), in absence of external magnetic field, is prototype of an Ising model. In case of square lattice of planar spins, one spin interacts with four other nearest neighbour spins i.e. on an average to another one spin. Below a certain ambient temperature, denoted as \(T_c\), the two dimensional array of spins reduces to a planar magnet with magnetic moment per site varying as a function of \(\frac{T}{T_c}\). This function was inferred, \([11]\), by Lars Onsager way back in 1948, \([12]\) and thoroughly deduced thereafter by C.N.Yang\([13]\). This function we are referring to as Onsager solution. Moreover, systems, \([14]\), showing behaviour like Onsager solution is rare to come across. Graphically, the Onsager solution appears as in fig.1. In the Bragg-Williams and Bethe-Peierls approximations for an Ising model in any dimension, in (absence)presence of external magnetic fields, reduced magnetisation as a function of reduced temperature, below the phase transition temperature, \(T_c\), vary as in the figures 2-4. The Bragg-Williams and Bethe-Peierls approximations are motivated below.

A. Bragg-Williams approximation

Let us consider a coin. Let us toss it many times. Probability of getting head or, tale is half i.e. we will get head and tale equal number of times. If we attach value one to head, minus one to tale, the average value we obtain, after many tossing is zero. Instead let us consider a one-sided loaded coin, say on the head side. The probability of getting head is
more than one half, getting tale is less than one-half. Average value, in this case, after many
tossing we obtain is non-zero, the precise number depends on the loading. The loaded coin
is like ferromagnet, the unloaded coin is like paramagnet, at zero external magnetic field.
Average value we obtain is like magnetisation, loading is like coupling among the spins of
the ferromagnetic units. Outcome of single coin toss is random, but average value we get
after long sequence of tossing is fixed. This is long-range order. But if we take a small
sequence of tossing, say, three consecutive tossing, the average value we obtain is not fixed,
can be anything. There is no short-range order.
Let us consider a row of spins, one can imagine them as spears which can be vertically up
or, down. Assume there is a long-range order with probability to get a spin up is two third.
That would mean when we consider a long sequence of spins, two third of those are with
spin up. Moreover, assign with each up spin a value one and a down spin a value minus
one. Then total spin we obtain is one third. This value is referred to as the value of long-
range order parameter. Now consider a short-range order existing which is identical with
the long-range order. That would mean if we pick up any three consecutive spins, two will
be up, one down. Bragg-Williams approximation means short-range order is identical with
long-range order, applied to a lattice of spins, in general. Row of spins is a lattice of one
dimension.
Now let us imagine an arbitrary lattice, with each up spin assigned a value one and a down
spin a value minus one, with an unspecified long-range order parameter defined as above by
\[ L = \frac{1}{N} \Sigma_i \sigma_i, \]
where \( \sigma_i \) is i-th spin, N being total number of spins. L can vary from minus one
to one. \( N = N_+ + N_- \), where \( N_+ \) is the number of up spins, \( N_- \) is the number of down spins.
\[ L = \frac{1}{N}(N_+ - N_-). \]
As a result, \( N_+ = \frac{N}{2}(1 + L) \) and \( N_- = \frac{N}{2}(1 - L) \). Magnetisation or, net
magnetic moment, \( M \) is \( \mu \Sigma_i \sigma_i \) or, \( \mu(N_+ - N_-) \) or, \( \mu N L \), \( M_{\text{max}} = \mu N \). \( \frac{M}{M_{\text{max}}} = L \). \( \frac{M}{M_{\text{max}}} \) is
referred to as reduced magnetisation. Moreover, the Ising Hamiltonian,\([11]\), for the lattice of
spins, setting \( \epsilon \) to one, is
\[ \epsilon \sum_{n,n} \sigma_i \sigma_j - H \Sigma_i \sigma_i, \]
where \( n,n \) refers to nearest neighbour pairs. The difference \( \Delta E \) of energy if we flip an up spin to down spin is, \([15]\), \( 2\epsilon \gamma \bar{\sigma} + 2H \), where
\( \gamma \) is the number of nearest neighbours of a spin. According to Boltzmann principle, \( \frac{N_-}{N_+} \)
equals \( \exp(\frac{-\Delta E}{k_B T}) \),\([16]\). In the Bragg-Williams approximation,\([17]\), \( \bar{\sigma} = L \), considered in the
thermal average sense. Consequently,
\[ \frac{ln L}{1 - L} = 2 \frac{\gamma \epsilon L + H}{k_B T} = 2 \frac{L + H}{\gamma / k_B} = 2 \frac{L + c}{T_c} \]  
(1)
where, \( c = \frac{H}{\gamma} \), \( T_c = \frac{\gamma c}{k_B} \), \( \frac{T}{T_c} \) is referred to as reduced temperature.

Plot of \( L \) vs \( \frac{T}{T_c} \) or, reduced magnetisation vs. reduced temperature is used as reference curve. In the presence of magnetic field, \( c \neq 0 \), the curve bulges outward. Bragg-Williams is a Mean Field approximation. This approximation holds when number of neighbours interacting with a site is very large, reducing the importance of local fluctuation or, local order, making the long-range order or, average degree of freedom as the only degree of freedom of the lattice. To have a feeling how this approximation leads to matching between experimental and Ising model prediction one can refer to FIG.12.12 of [15]. W. L. Bragg was a professor of Hans Bethe. Rudolf Peierls was a friend of Hans Bethe. At the suggestion of W. L. Bragg, Rudolf Peierls following Hans Bethe improved the approximation scheme, applying quasi-chemical method.

**B. Bethe-Peierls approximation in presence of four nearest neighbours, in absence of external magnetic field**

In the approximation scheme which is improvement over the Bragg-Williams, [10],[15],[16],[17],[18], due to Bethe-Peierls, [19], reduced magnetisation varies with reduced temperature, for \( \gamma \) neighbours, in absence of external magnetic field, as

\[
\ln \left( \frac{\gamma - 2}{\gamma - 1} \right) = \frac{T}{T_c} \cdot \text{factor} = \frac{M}{M_{\text{max}}} + 1 \quad \frac{1 - \frac{M}{M_{\text{max}}}}.
\]

\( \ln \frac{\gamma - 2}{\gamma - 2} \) for four nearest neighbours i.e. for \( \gamma = 4 \) is 0.693. For a snapshot of different kind of magnetisation curves for magnetic materials the reader is urged to give a google search "reduced magnetisation vs reduced temperature curve". In the following, we describe datas generated from the equation(1) and the equation(2) in the table, I, and curves of magnetisation plotted on the basis of those datas. BW stands for reduced temperature in Bragg-Williams approximation, calculated from the equation(1). BP(4) represents reduced temperature in the Bethe-Peierls approximation, for four nearest neighbours, computed from the equation(2). The data set is used to plot fig.4. Empty spaces in the table, I, mean corresponding point pairs were not used for plotting a line.
TABLE I. Reduced magnetisation vs reduced temperature data for Bragg-Williams approximation, in absence of and in presence of magnetic field, $c = \frac{H}{\gamma e} = 0.01$, and Bethe-Peierls approximation in absence of magnetic field, for four nearest neighbours.

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<th>$\text{BP}(4, H = 0)$</th>
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C. Bethe-peierls approximation in presence of four nearest neighbours, in presence of external magnetic field

In the Bethe-Peierls approximation scheme, [19], reduced magnetisation varies with reduced temperature, for $\gamma$ neighbours, in presence of external magnetic field, as

$$
\ln \frac{\gamma}{\gamma - 2} \frac{\text{factor}}{e^{\frac{2\mu H}{\gamma} \text{factor} - \frac{1}{\gamma - 2} e^{\frac{2\mu H}{\gamma} \text{factor}}}} = \frac{T}{T_c} \text{ factor } = \frac{M}{M_{\text{max}}} + 1 \frac{1}{1 - \frac{M}{M_{\text{max}}}}. \tag{3}
$$

Derivation of this formula ala [19] is given in the appendix of [7].

$\ln \frac{\gamma}{\gamma - 2}$ for four nearest neighbours i.e. for $\gamma = 4$ is 0.693. For four neighbours,

$$
\ln \frac{\gamma}{\gamma - 2} \frac{\text{factor}}{e^{\frac{2\mu H}{\gamma} \text{factor} - \frac{1}{\gamma - 2} e^{\frac{2\mu H}{\gamma} \text{factor}}}} = \frac{T}{T_c} \text{ factor } = \frac{M}{M_{\text{max}}} + 1 \frac{1}{1 - \frac{M}{M_{\text{max}}}}. \tag{4}
$$
In the following, we describe data in the table, I, generated from the equation (4) and curves of magnetisation plotted on the basis of those data. BP(4, $\beta H = 0.06$) stands for reduced temperature in Bethe-Peierls approximation, for four nearest neighbours, in presence of a variable external magnetic field, H, such that $\beta H = 0.06$. Calculated from the equation (4)’, BP(4, $\beta H = 0.05$) stands for reduced temperature in Bethe-Peierls approximation, for four nearest neighbours, in presence of a variable external magnetic field, H, such that $\beta H = 0.05$. Calculated from the equation (4), BP(4, $\beta H = 0.04$) stands for reduced temperature in Bethe-Peierls approximation, for four nearest neighbours, in presence of a variable external magnetic field, H, such that $\beta H = 0.04$. Calculated from the equation (4), BP(4, $\beta H = 0.02$) stands for reduced temperature in Bethe-Peierls approximation, for four nearest neighbours, in presence of a variable external magnetic field, H, such that $\beta H = 0.02$. Calculated from the equation (4), The data set is used to plot fig. 3 and fig. 4. Empty spaces in the table, II, mean corresponding point pairs were not used for plotting a line.

D. Spin-Glass

In the case of coupling between(n) among the spins, not necessarily n.n, for the Ising model is(are) random, we get Spin-Glass. When a lattice of spins randomly coupled and in an external magnetic field, goes over to the Spin-Glass phase, magnetisation increases steeply like $\frac{1}{T-T_c}$ i.e. like the branch of rectangular hyperbola, up to the phase transition temperature, followed by very little increase, [20-22], in magnetisation, as the ambient temperature continues to drop.

Theoretical study of Spin Glass started with the paper by Edwards, Anderson [23]. They were trying to explain two experimental results concerning continuous disordered freezing (phase transition) and sharp cusp in static magnetic susceptibility. This was followed by a paper by Sherrington, Kickpatrick, [24], who dealt with Ising model with interactions being present among all neighbours. The interaction is random, follows Gaussian distribution and does not distinguish one pair of neighbours from another pair of neighbours, irrespective of the distance between two neighbours. In presence of external magnetic field, they predicted
in their next paper, [25], below spin-glass transition temperature a spin-glass phase with non-zero magnetisation. Almeida et al., [26], Gray and Moore, [27], finally Parisi, [28], [29], improved and gave final touch, [30], to their line of work. Parisi and collaborators, [31]–[35], wrote a series of papers in postscript, all revolving around a consistent assumption of constant magnetisation in the spin-glass phase in presence of little constant external magnetic field.

In another sequence of theoretical work, by Fisher et al., [36]–[38], concluded that for Ising model with nearest neighbour or, short range interaction of random type spin-glass phase does not exist in presence of external magnetic field.

For recent series of experiments on spin-glass, the references, [39], [40], are the places to look.

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TABLE II. Bethe-Peierls approx. in presence of little external magnetic fields
For an indepth account, accessible to a commoner, the series of articles by late P. W. Anderson in Physics Today, [11]–[17], is probably the best place to look into. For a book to enter into the subject of spin-glass, one may start at [18].

Here, in our work to follow, spin-glass refers to spin-glass phase of a system with infinite range random interactions.

III. CURVES OF MAGNETISATION

The Ising Hamiltonian, [10], [19], for a lattice of spins is $- \epsilon \Sigma_{n.n} \sigma_i \sigma_j - H \Sigma_i \sigma_i$, where n.n refers to nearest neighbour pairs, $\sigma_i$ is i-th spin, H is external magnetic field and $\epsilon$ is coupling between two nearest neighbour spins. $\sigma_i$ is binary i.e. can take values $\pm 1$. At a temperature $T$, below a certain temperature called phase transition temperature, $T_c$, for the two dimensional Ising model in absence of external magnetic field i.e. for H equal to zero, the exact, unapproximated, Onsager solution gives reduced magnetisation as a function of reduced temperature as, [13], [19],

$$\frac{M}{M_{max}} = [1 - (\sinh \frac{0.8813736}{T/T_c})^{-4}]^{1/8}.$$  

Graphically, the Onsager solution appears as in fig.1. In the Bragg-Williams and Bethe-

![Onsager solution]

FIG. 1. Reduced magnetisation vs reduced temperature curves for exact solution of two dimensional Ising model, due to Onsager, in absence of external magnetic field

Peierls approximations for an Ising model in any dimension, in presence of external magnetic fields, reduced magnetisation as a function of reduced temperature, below the phase
FIG. 2. Reduced magnetisation vs reduced reduced temperature curves for Bragg-Williams approximation, in presence of little magnetic field, BW(c=0.01) and Bethe-Peierls approximation in absence of magnetic field, BP(4,βH=0), for four nearest neighbours (outer one).

The graphs in the figures are used in the sections to follow as reference curves.

FIG. 3. Reduced magnetisation vs reduced temperature curves, BP(4,βH), for Bethe-Peierls approximation in presence of little external magnetic fields, for four nearest neighbours, with βH = 2m.
FIG. 4. Reduced magnetisation vs reduced temperature curves, BP(4,\beta H=0.1) and BP(4,\beta H=0.08).
TABLE III. English entries: the first row represents letters of the English alphabet in the serial order, the second row is the respective number of entries, the third row describes the splitting of entries.

IV. METHOD OF STUDY

The English language alphabet is composed of twenty six letters. We take the Little Oxford English Dictionary. Then we count all the entries in the dictionary, one by one from the beginning to the end, starting with different letters. This has been done in two steps for the dictionary. First, we have counted all entries initiating with A form the section for the letter A. The number is two thousand three hundred sixty three. Second, we have enlisted all entries initiating with A form the sections for the letters B, D,...,Z. Then we have removed from the list entries already appearing in the section belonging to A. Then we have counted the number of the entries in that list. The number is eighty three. As a result total number of words beginning with A is two thousand three hundred and sixty three. This exercise was then followed for B,C,...Z. The result is the table, III. Next we count all the head-words, written in boldface, in the dictionary, one by one from the beginning to the end, starting with different letters. This has been done in two steps for the dictionary. First, we have counted all the head-words, initiating with A form the section for the letter A. The number is one thousand three hundred eleven. Second, we have enlisted all head-words initiating with A form the sections for the letters B, D,...,Z. Then we have removed from the list entries already appearing in the section belonging to A. Then we have counted the number of the head-words in that list. The number is zero. As a result total number of words beginning with A is one thousand three hundred and eleven. This exercise was then followed for B,C,...Z. The result is the table, IV.

To visualise the pattern of change of number of entries and head-words along the the letters initiating with, we draw the number of entries and head-words vs. sequence number of the respective letters in the fig.
TABLE IV. English headwords: the first row represents letters of the English alphabet in the serial order, the second row is the respective number of headwords, the third row describes the splitting of headwords.

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<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<td>7+0</td>
<td>82+0</td>
<td>39+0</td>
</tr>
</tbody>
</table>

FIG. 5. Vertical axis is number of entries and head-words of English and horizontal axis is the respective letters of the English alphabet. Letters are represented by the sequence number in the alphabet.

To explore for the occurrence of graphical law in the entries, we sort the letters according to the number of entries, in the descending order, denoted by $f$ and the respective rank, denoted by $k$. $k$ is a positive integer starting from one. Moreover, we attach a limiting rank, $k_{lim}$, or, $k_d$ and a limiting number of words. The limiting rank is maximum rank plus one, here it is twenty seven and the limiting number of words is one. As a result both $\frac{ln f}{ln f_{max}}$ and $\frac{ln k}{ln k_{lim}}$ varies from zero to one. Then we plot $\frac{ln f}{ln f_{max}}$ against $\frac{ln k}{ln k_{lim}}$. We then ignore the letters with the highest, then next highest, then next next highest and so on number of words and redo the plot, normalising the $ln f$s with next-to-maximum $ln f_{nextmax}$, and starting from $k = 2$; next-to-next-to-maximum $ln f_{nextnextmax}$, and starting from $k = 3$; next-to-next-to-next-to-maximum $ln f_{nextnextnextmax}$, and starting from $k = 4$, nnnmax $ln f_{nnnmax}$, and starting
from $k = 5$, $n_{\text{nnnnmax}} \ln f_{\text{nnnnmax}}$, and starting from $k = 6$, $n_{\text{nnnnnnmax}} \ln f_{\text{nnnnnnmax}}$, and starting from $k = 7$, $10n_{\text{max}} \ln f_{\text{nnnnnnnnmax}}$, and starting from $k = 11$. The results are the table $\nabla$ and the figures (fig.8-fig.16).

To explore for the occurrence of graphical laws in the head-words, we sort the letters according to the number of head-words, in the descending order, denoted by $f$ and the respective rank, denoted by $k$. $k$ is a positive integer starting from one. Moreover, we attach a limiting rank, $k_{\text{lim}}$, or, $k_{d}$ and a limiting number of words. The limiting rank is maximum rank plus one, here it is twenty-seven and the limiting number of words is one. As a result both $\frac{\ln f}{\ln f_{\text{max}}}$ and $\frac{\ln k}{\ln k_{\text{lim}}}$ varies from zero to one. Then we plot $\frac{\ln f}{\ln f_{\text{max}}}$ against $\frac{\ln k}{\ln k_{\text{lim}}}$. We then ignore the letters with the highest, then next highest, then next next highest and so on number of words and redo the plot, normalising the $\ln fs$ with next-to-maximum $\ln f_{\text{nextmax}}$, and starting from $k = 2$; next-to-next-to-maximum $\ln f_{\text{nextnextmax}}$, and starting from $k = 3$; next-to-next-to-next-to-maximum $\ln f_{\text{nextnextnextmax}}$, and starting from $k = 4$, $\text{n}_{\text{nnmax}} \ln f_{\text{nnmax}}$, and starting from $k = 5$, $\text{n}_{\text{nnnnmax}} \ln f_{\text{nnnnmax}}$, and starting from $k = 6$, $10n_{\text{max}} \ln f_{10n_{\text{max}}}$, and starting from $k = 11$. The results are the table $\nabla$ and the figures (fig.18-fig.24).

V. RESULTS

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</tr>
</tbody>
</table>

**TABLE V.** entries of the Little Oxford English Dictionary: ranking, natural logarithm, normalisations
FIG. 6. Vertical axis is $\frac{\ln f}{\ln f_{\text{max}}}$ and horizontal axis is $\frac{\ln k}{\ln k_{\text{lim}}}$. The + points represent the entries of the English language with the fit curve being Bethe-Peierls curve in presence of four nearest neighbours and in absence of external magnetic field. The uppermost curve is the Onsager solution.

FIG. 7. Vertical axis is $\frac{\ln f}{\ln f_{\text{next-max}}}$ and horizontal axis is $\frac{\ln k}{\ln k_{\text{lim}}}$. The + points represent the entries of the English language with the fit curve being Bethe-Peierls curve in presence of four nearest neighbours and little magnetic field, $m = 0.005$ or, $\beta H = 0.01$. The uppermost curve is the Onsager solution.
FIG. 8. Vertical axis is $\frac{\ln f}{\ln f_{\text{max}}}$ and horizontal axis is $\frac{\ln k}{\ln k_{\text{lim}}}$ The + points represent the entries of the english language with the fit curve being Bethe-Peierls curve in presence of four nearest neighbours and little magnetic field, $m = 0.01$ or, $\beta H = 0.02$. The uppermost curve is the Onsager solution.

FIG. 9. Vertical axis is $\frac{\ln f}{\ln f_{\text{max}}}$ and horizontal axis is $\frac{\ln k}{\ln k_{\text{lim}}}$ The + points represent the entries of the english language with the fit curve being Bethe-Peierls curve in presence of four nearest neighbours and little magnetic field, $m = 0.025$ or, $\beta H = 0.05$. The uppermost curve is the Onsager solution.
FIG. 10. Vertical axis is $\frac{\ln f}{\ln f_{\text{max}}}$ and horizontal axis is $\frac{\ln k}{\ln k_{\text{lim}}}$. The + points represent the entries of the English language with the fit curve being Bethe-Peierls curve in presence of four nearest neighbours and little magnetic field, $m = 0.03$ or, $\beta H = 0.06$. The uppermost curve is the Onsager solution.

FIG. 11. Vertical axis is $\frac{\ln f}{\ln f_{\text{max}}}$ and horizontal axis is $\frac{\ln k}{\ln k_{\text{lim}}}$. The + points represent the entries of the English language with the fit curve being Bethe-Peierls curve in presence of four nearest neighbours and little magnetic field, $m = 0.04$ or, $\beta H = 0.08$. The uppermost curve is the Onsager solution.
FIG. 12. Vertical axis is $\frac{\ln f}{\ln f_{\text{max}}}$ and horizontal axis is $\frac{\ln k}{\ln k_{\text{lim}}}$. The + points represent the entries of the English language with the fit curve being Bethe-Peierls curve in presence of four nearest neighbours and little magnetic field, $m = 0.04$ or, $\beta H = 0.08$. The uppermost curve is the Onsager solution.

FIG. 13. Vertical axis is $\frac{\ln f}{\ln f_{\text{max}}}$ and horizontal axis is $\frac{\ln k}{\ln k_{\text{lim}}}$. The + points represent the entries of the English language, with the fit curve being Bethe-Peierls curve in presence of four nearest neighbours and little magnetic field, $m = 0.05$ or, $\beta H = 0.1$. The reference curve is the Onsager solution. The entries of the Little Oxford English Dictionary are not going over to the Onsager solution.
FIG. 14. Vertical axis is $\ln f_{10n-m_{ax}}$ and horizontal axis is $\frac{\ln k}{\ln k_{lim}}$. The + points represent the entries of the english language. The reference curve is the Onsager solution. The entries of the Little Oxford English Dictionary are not going over to the Onsager solution.
From the figures (fig.6-fig.14), we observe that behind the entries of the dictionary, there is a magnetisation curve, $BP(4, \beta H = 0.01)$, in the Bethe-Peierls approximation with four nearest neighbours, in presence of little magnetic field, $\beta H = 0.01$.

Moreover, the associated correspondence with the Ising model is,

$$\frac{lnf}{lnf_{next-to-maximum}} \leftrightarrow \frac{M}{M_{max}},$$

and

$$lnk \leftrightarrow T.$$

$k$ corresponds to temperature in an exponential scale. As temperature decreases, i.e. $lnk$ decreases, $f$ increases. The letters which are recording higher entries compared to those which have lesser entries are at lower temperature. As the English language expands, the letters which get enriched more and more, fall at lower and lower temperatures. This is a manifestation of cooling effect as was first observed in another way.

On the top of it, on successive higher normalisations, entries of the English language, do not go over to Onsager solution in the normalised $lnf$ vs $\frac{lnk}{lnk_{lim}}$ graphs.

As matching of the plots in the figures fig.6-fig.17, with comparator curves i.e. the magnetisation curves of Bethe-Peierls approximations, is with large dispersions and dispersion does not reduce significantly over higher orders of normalisations, to explore for possible existence of spin-glass transition, in presence of little external magnetic field, $\frac{lnf}{lnf_{max}}$, $\frac{lnf}{lnf_{next-max}}$ and $\frac{lnf}{lnf_{nn-max}}$ are drawn against $lnk$ in the figures fig.15-fig.17.
FIG. 15. Vertical axis is $\ln f/\ln f_{\text{max}}$ and horizontal axis is $\ln k$. The + points represent the entries of the English language.

FIG. 16. Vertical axis is $\ln f/\ln f_{\text{next-max}}$ and horizontal axis is $\ln k$. The + points represent the entries of the English language.

In the figures Fig.15-Fig.17, the points has a smoothened transition, rather than a clearcut transition. Above the transition point(s), the line is almost horizontal, increasing little and below the transition point(s), points line rises sharply, but without the tail part, like the branch of a rectangular hyperbola. Hence, the entries of the English language, better
FIG. 17. Vertical axis is $\frac{lnf}{lnf_{\text{max}}}$ and horizontal axis is $lnk$. The + points represent the entries of the English language.

be described, to underlie a Spin-Glass magnetisation curve, [20], in the presence of little magnetic field.
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**TABLE VI.** headwords of the Little Oxford English Dictionary: ranking, natural logarithm, normalisations

**B. headwords**
FIG. 18. Vertical axis is $\ln f / \ln f_{\text{max}}$ and horizontal axis is $\ln k / \ln k_{\lim}$. The + points represent the headwords of the English language with the fit curve being Bethe-Peierls curve in presence of four nearest neighbours and in absence of external magnetic field. The uppermost curve is the Onsager solution.

FIG. 19. Vertical axis is $\ln f / \ln f_{\text{next-max}}$ and horizontal axis is $\ln k / \ln k_{\lim}$. The + points represent the headwords of the English language with the fit curve being Bethe-Peierls curve in presence of four nearest neighbours and little magnetic field, $m = 0.005$ or, $\beta H = 0.01$. The uppermost curve is the Onsager solution.
FIG. 20. Vertical axis is $\frac{\ln f}{\ln f_{\text{nnn-max}}}$ and horizontal axis is $\frac{\ln k}{\ln k_{\text{lim}}}$. The + points represent the headwords of the English language with the fit curve being Bethe-Peierls curve in presence of four nearest neighbours and little magnetic field, $m = 0.01$ or, $\beta H = 0.02$. The uppermost curve is the Onsager solution.

FIG. 21. Vertical axis is $\frac{\ln f}{\ln f_{\text{nnn-max}}}$ and horizontal axis is $\frac{\ln k}{\ln k_{\text{lim}}}$. The + points represent the headwords of the English language with the fit curve being Bethe-Peierls curve in presence of four nearest neighbours and little magnetic field, $m = 0.025$ or, $\beta H = 0.05$. The uppermost curve is the Onsager solution.
FIG. 22. Vertical axis is $\frac{\ln f}{\ln f_{\max}}$ and horizontal axis is $\frac{\ln k}{\ln k_{\max}}$. The + points represent the headwords of the English language with the fit curve being Bethe-Peierls curve in presence of four nearest neighbours and little magnetic field, $m = 0.03$ or, $\beta H = 0.06$. The uppermost curve is the Onsager solution.

FIG. 23. Vertical axis is $\frac{\ln f}{\ln f_{\max}}$ and horizontal axis is $\frac{\ln k}{\ln k_{\max}}$. The + points represent the headwords of the English language with the fit curve being Bethe-Peierls curve in presence of four nearest neighbours and little magnetic field, $m = 0.04$ or, $\beta H = 0.08$. The uppermost curve is the Onsager solution.
FIG. 24. Vertical axis is $\frac{\ln f}{\ln 10^{n_{\text{max}}}}$ and horizontal axis is $\frac{\ln k}{\ln 10^{\text{lim}}}$. The + points represent the headwords of the English language. The uppermost curve is the Onsager solution. The headwords of the Little Oxford English Dictionary are not going over to the Onsager solution.
1. conclusion

From the figures (fig. [18-24]), we observe that behind the head-words of the Little Oxford English Dictionary, [I], there is a magnetisation curve, BP(4, \( \beta H = 0.01 \)), in the Bethe-Peierls approximation with four nearest neighbours, in presence of little magnetic field, \( \beta H = 0.01 \).

Moreover, the associated correspondance with the Ising model is,

\[
\frac{\ln f}{\ln f_{\text{next-to-maximum}}} \leftrightarrow \frac{M}{M_{\text{max}}},
\]

and

\[
\ln k \leftrightarrow T.
\]

\( k \) corresponds to temperature in an exponential scale, [II]. As temperature decreases, i.e. \( \ln k \) decreases, \( f \) increases. The letters which are recording higher entries compared to those which have lesser entries are at lower temperature. As the English language expands, the letters which get enriched more and more, fall at lower and lower temperatures. This is a manifestation of cooling effect as was first observed in [III] in another way.

On the top of it, on successive higher normalisations, headwords of the Little Oxford English Dictionary, do not go over to Onsager solution in the normalised \( \ln f \) vs \( \frac{\ln k}{\ln k_{\text{lim}}} \) graphs.

As matching of the plots in the figures fig. (18-24), with comparator curves i.e. the magnetisation curves of Bethe-Peierls approximations, is with large dispersions and dispersion does not reduce significantly over higher orders of normalisations, to explore for possible existence of spin-glass transition, in presence of little external magnetic field, \( \frac{\ln f}{\ln f_{\text{max}}}, \frac{\ln f}{\ln f_{\text{next-max}}} \) and \( \frac{\ln f}{\ln f_{\text{ran-max}}} \) are drawn against \( \ln k \) in the figures fig. (25-27).
FIG. 25. Vertical axis is $\frac{\ln f}{\ln f_{\text{max}}}$ and horizontal axis is $\ln k$. The + points represent the headwords of the English language.

FIG. 26. Vertical axis is $\frac{\ln f}{\ln f_{\text{next-max}}}$ and horizontal axis is $\ln k$. The + points represent the headwords of the English language.

In the figures Fig. 25–Fig. 27, the points have a smoothened transition, rather than a clearcut transition. Above the transition point(s), the line is almost horizontal, increasing little and below the transition point(s), points line rises sharply, but without the tail part, like the branch of a rectangular hyperbola. Hence, the headwords of the English language, better
FIG. 27. Vertical axis is $\frac{lnf_{\text{max}}}{lnf_{\text{max}}}$ and horizontal axis is $lnk$. The + points represent the headwords of the English language.

be described, to underlie a Spin-Glass magnetisation curve, [20], in the presence of little magnetic field.

VI. DISCUSSION

We compare the English language with the Basque and the Romanian in the table, VII. To make the comparison more explicit, we draw $\frac{lnf}{lnf_{\text{max}}}$ vs $lnk$ simultaneously in the figure Fig.28 for both the entries and headwords of the English language, [1], as well as $\frac{lnf}{lnf_{\text{max}}}$ vs $lnk$ for headwords of the English, [1], headwords of the Basque, [51] and words of the Romanian language, [52], in the figure Fig.29, to put forward their relative spin-glass natures.

Moreover, it is of immediate interest to carry on the analysis of this paper to the non-compound words and to the non-derived words of the Little Oxford English Dictionary, [1]. It is of further interest to continue the analysis with the Pocket Oxford English Dictionary, [53], then with the Concise Oxford English Dictionary, [54], then to the complete Oxford English Dictionary.
<table>
<thead>
<tr>
<th>Insertion</th>
<th>Englishle</th>
<th>Englishlh</th>
<th>basque</th>
<th>romanian</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\frac{\lambda f}{\lambda f_{\text{max}}}$ vs $\frac{\lambda k}{\lambda k_{\text{max}}}$</td>
<td>BP(4, $\beta H=0$)</td>
<td>BP(4, $\beta H=0$)</td>
<td>BW($c=0.01$)</td>
<td>BW($c=0.01$)</td>
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<tr>
<td>$\frac{\lambda f}{\lambda f_{\text{max}}}$ vs $\frac{\lambda k}{\lambda k_{\text{max}}}$</td>
<td>BP(4, $\beta H=0.01$)</td>
<td>BP(4, $\beta H=0.01$)</td>
<td>BP(4, $\beta H=0.01$)</td>
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<tr>
<td>$\frac{\lambda f}{\lambda f_{\text{max}}}$ vs $\frac{\lambda k}{\lambda k_{\text{max}}}$</td>
<td>BP(4, $\beta H=0.02$)</td>
<td>BP(4, $\beta H=0.02$)</td>
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<td>$\frac{\lambda f}{\lambda f_{\text{max}}}$ vs $\frac{\lambda k}{\lambda k_{\text{max}}}$</td>
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<td>BP(4, $\beta H=0.06$)</td>
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<td></td>
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<td>Onsager: no</td>
<td>Onsager: no</td>
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<tr>
<td>spin-glass</td>
<td>transition</td>
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TABLE VII. comparison of generalised words, headwords of the English and the words of the basque and the romanian languages
FIG. 28. Vertical axis is $\ln f / \ln f_{\text{max}}$ and horizontal axis is $\ln k$. The + points represent the entries of the English language and the × points represent the headwords of the English language.

FIG. 29. Vertical axis is $\ln f / \ln f_{\text{max}}$ and horizontal axis is $\ln k$. The * points represent the headwords of the Little Oxford English Dictionary, the + points represent the headwords of the Basque language and the × points represent the words of the Romanian language.
VII. Acknowledgement

We have used gnuplot for drawing the figures.


[31] G. Parisi, G. Toulouse, "A simple hypothesis for the spin glass phase of the pfinite-ranged


at odds, at once, a packet, above par, at full pelt, a pickle, at a premium, at random, a rainy day, a raw deal, as regards, a riot, a good sailor, a scream, at sea, a second, a seventh, a sight, at sixes and sevens, a sixth, at stake, a state, a sucker fish, a toad, a tall order, a tall story, a tenth, a third, at full tilt, a variety of, as well, a while, a whisper, at will, at your wits' ends, at bay, at someone's beck and call, at someone's behest, APATOSAURUS, a bushman's holiday, a can of worms, a chip, a credit to, at various purposes, as the crow flies, a shot in the dark, a good deal, a great deal, at death's door, at your disposal, at the double, at a low ebb, an eighth, an eternity.

AESTHETIC, addle a feather in your cap, a fool for a few, a fifth, a flock, a fly in the ointment, a fly on the wall, a forlornity, a fourth's, a fraggle, at gunpoint, at half mast, at hand, a hoot, at knife-point, at large, a laugh, at least, a legion, at leisure, a little, a load, at a loss, a lot, a mass of, a measure of, at the mercy of, a mint, a minute, a mixture of.
Wor(l)d(s) starting with B from other letter(s) for:

- obliged
- obligated
- be obliged
- be opposed to
- be orphaned
- beyond
- below
- below par
- be party to
- be punished
- be pigeon
- be plunged into
- be ejected to do
- be apart
- be possessed of
- be prepared to do
- be pursued for
- be pursued to do
- be projected
- be prosecuted
- be puffed
- be quartered
- be raised of
- be ranged against
- be reincarnated
- be related
- be relieved
- be removed
- be regarded
- be repeated
- be resigned
- be resourced
- be revenged
- be rob of
- be riddled with
- by rights
- be rejected
- be represented
- be represented
- be said
- be scattered
- behind the scenes
- be seated
- be selected
- be chosen of
- be shipwrecked
- be shed
- be sickening for
- be sick
- be situated
- by the skin of your teeth
- be no show
- be smiling
- be twinkled
- be ensnared in
- be shrewd
- be eulogized under
- be spaced out
- be in eviscerating image of
- be splitting
- be spoiling for
- be spoken for
- be spread-eagled
- be staying
- be starved
- be stayed of
- be steeped in
- be stuck
- be stuck with
- be streamlined
- be stereo with
- be strong
- be strung out
- be supposed to do
- be torn
- be tempted to do
- be toged up
- be touched
- be transfigured
- be transported
- be traumatized
- blow your own
- be turned out
- be typecast
- be quick
- be upturned
- be used to
- get well
- be quick on the uptake
- be slow on the uptake
- be by virtue of
- be wanted
- be on the way
- be worn on
- be muddled
- be weighted
- be widowed
- be taken
- be oik
- be acquainted with
- be alarmed
- be apprenticed
- be arrayed
- be arrayed in
- be articulated
- be attached to
- be attire
- be attired
- be capped
- be carried away
- be caught in
- be caught off
- be choked with
- be cloaked in
- be conditioned
- be confined to
- be conjugated
- be connected
- break down
- be cracked up to
- be crowling with
- be in credit
a credit to, at cross purposes,
be cursed with, be dammed, be deadlocked, by default
be descended from, be designed, be desolated, be
destined for, be devastated, be dying for, be dying
to do, by dint of, be disposed to, be distributed,
be drilled up, be diminished, be drafted, be
be enamored of, be enamored with, be endowed
with, be enmeshed, be entrenched, be etched on,
be etched in, be expecting, be fated, be fixated on,
be flattered, be flushed with, be forewarned,
be founded on, be fronted with, below the gaff,
be garbled in, be getting in, be glued to, be
going to be, be going to do, be grounded in, be
grounded on, be hooked, by hook or by crook, be hyped
up, be implicated in, be inclined to, be indicated
be infatuated with, become institutionalized, be intoxicated,
be incurred to, be invalidated, be in the know, be left,
be located, be at a loss and, be lost, be lost in,
be lost on, be lost for words, be marooned, bone
marrow, by all means, by no means, be minded, be mired,
be miscast, bury the hatchet

#189+1
#190
Entries on, generalized words starting with C from other letters' sections

come into your own, cut someone to the quick, criminal record, cannot seem to do, cock a snook at, call a spade a spade, clutch at straws, chimney sweep, come to terms with, come up bumps, czar, czar, come unstuck, my wolf, cannot abide, come of age, call someone's bluff, close to the bone, call it a day, come to grips with, coat hanger, cadet, curb, cot litter, cassava
Draw the short straw, do someone a good turn, do a bunk.

Starting with D from other letters' sections

dementia, earth tremor, eon, esthetics, eat humble pie.

Starting with E from other letters' sections

evren, first person, from pillar to post, full in the pinch, for the sake of, for old times' sake, for a song, full term, from thence, full tilt, for the time being, from whence, full of beans, fit the bill, fresh blood, forget yourself, from hand to mouth, for instance.

Starting with G from other letters' sections

go overboard, giant panda, go to pot, go to rack and ruin, go off the rails, get rid of, good niddance, give someone a going, good Samaritan, go separate, going nowhere, go to town, get undressed, get used to, go to the wall, give way, give way to, get wind of, get wanked up, go AWOL, give a wide birth to, get the better of, gave birth, go by the board, get bogged, get to the bottom of, good cheer, get your comeuppance, give you the creeps, get your dander up, get your just deserts, go to the dogs, get drugged, get to grips with, get the hang of, go the whole hog, go to G.E.L. #38
holy orders, hold your own, have something off part, hold
someone to ransom, high sheriff, have a thick skin, high society
have a soft spot for, hold sway, have no truck with,
have the upper hand, held water, have a whale of a time,
have an axe to grind, hot-air, hold someone at bay,
hold something at bay, have a bone to pick with
Holy Communion, held court, have designs on, hold the fort,
have a fung in your throat, His Grace, Her Grace, His
Honour, hit the jackpot, the Ladyship, His Lordship,
the Majesty, have the measure of I had to, hydrogen peroxide

Entries on, generalized words starting with I from other
letters' nations

in the offering, in the offering, in the order of, in particular,
in person, in the pink, in the pipeline, in principle, in print,
in public, in the red, in the region of, in retrospect,
in your own right, ice pick, in the running, in reason,
in service, in your shirt sleeves, in spades, in spit of,
in stitches, in stone, in sync, in sympathy, in tatters,
in tatters, in the throes of, in time, in touch, in tow,
in train, in a hurry, in trim, in unison, in vain,
in view of, in the wake of, in the way, in a word,
in abeyance, into abeyance, in accordance with, in arraies,
into the bargain, it behoves someone to do, in the black,
in the buff, in bulk, in camera, in case, in check,
in the clear, in closer, in the closet, in cold blood,
in content, in confidence, in contention, in the dark, in drag,
in demand, in effect, in its entirety, in evidence, in favour of,
Entries on, generalized words starting with t from other letters' sections

jump the gun,

Entries on, generalized words starting with k from other letters' sections

keep pace with, keep your pecker up, keep someone posted, keep a low profile, knock someone for six, keep tabs on, keep track of, keep watch, keep someone at bay, keep something at bay, keep your nose to the ground stone, keep mum, KAPTAN, KASBAH

...starting with t from other letters' sections

let rip, lead shot, like a shot, long ten, lose track of, lay waste to, let bygones be bygones, let the cat out of the bag, like clockwork, leave someone to their own devices, lie doggo, lose face, let your hair down,
--- starting with M from other letters' sections

mastrual period, make a play for, Marita, multiple sclerosis, motor scooter, make eyes, make it snappy, make a splash, make way, make heavy weather, make allowances for, make amends, make a beline fox, make the best of, make a bolt fox, make capital out of, make ends met, make fun of, make a hash of, make head way, musical instrument, make a killing, make love, mobile phone.

# 21

--- starting with N from other letters' sections

not a patch on, North pole, not concerned, not to be sniffed at, not to be jiggered at, natural wastage, no wonder, new blood, no bones about, not much cop, no doubt, no holds barred, not take kindly to, not mince your words, not have a clue, not half.

# 16

--- starting with O from other letters' section

on pain of, on a par, on paper, on principle, out of print, on the prowl, on purpose, out of the question, on the waggie, on the rebound, off the record, on demand, on the rocks, off your rocker, out of the running, off course, off the shelf, on the shelf, on a shoestring, on shore, one sixth, one go, on song, out of sorts, outer space, on spec, on the spot, on stream, on the strength of, out of sight, on tap, on tenterhooks, on tenth, on third, on time, on tiptoe, on your toes, on top of, over the top, out of touch, on tow, on the right track, on the wrong track, ocean bunch, on trial, on the but, on the wagon, on the wane, of your own accord, on account of, on no account, on the air, on all fours, off your own bat
Starting with & from other letters' sections

Old hat, on behalf of, on someone's behalf, on the blink, out of the blue, out of bounds, on the muzzle, on the back burner, on the cards, on the off chance, old chestnut, on your shoulder, out of the closet, out of commission, out from the count, of course, off the cuff, out of doors, on the dot, out of earshot, on eighth, on else, one fifth, old flame, out of hand, on heat, on hold, on the hop, on horseback, on the house, on thin ice, out of keeping with, out of kilter, of late, out on a limb, off limits, on the line, out of line, on the make, oregano, on your marks, on the market, out of your mind, over the moon, on ninth, 

# 99

Starting with & from other letters' sections

Put someone through the paces, play cutting, put someone to shame, put thing to shame, put something to sleep, pull your socks up, pull out all the stops, plight your troth, playuant, put two and two together, put the wind up, pass the buck, press and stamp, put a damper on, play havoc with, pay heed, praying mantis, pass muster, 

# 18

Starting with & from other letters' sections

# 0

Starting with & from other letters' sections

Red panda, raise your sights, ring a bell, round the bend, run the gamut, run the gauntlet, rubbert, rest on your laurels, 

# 0
starting with & from other letters' section

and someone packing, second person, South Pole, swimming pool, space probe, stand to reason, spread like wild fire, step into the breach, stand on armpit, second cousin, someone's duke, someone's due, an eye to eye, save face, sit on the fence, split hairs, speech impediment, SELLEROSIS

starting with & from other letters' section

under pain of, her under par, up to scratch, up your sleeve, up the spout, under someone's thumb, under the weather, under wraps, up in arms, under the auspices, under a cloud, under the counter, up to the mark

starting with & from other letters' section

with &

starting with & from other letters' section

through your brains, would rather, worst, worse, wild boar, within earshot, without fail, with flying colours, wear your heart on your sleeve, wax lyrical with regard to, would sooner, with no strings attached, with raving, with a view to, without demur

starting with & from other letters' section

xx, xx

starting with & from other letters' section

your reason, your salad days, your shout, your stuff, your thing, your things, your turf, your wort, your wood, your elder, your filial, your folks, your Grace, your hard work, your heyday, your Honour, your ken, your liking, your Lordship, your Majesty, your niche

# 2

# 13

# 15

# 21
last words starting with T from other letters' sections

2 occult (472) in odd, the old guard, the Olympic Games.

Katon + disinterested, the open air, the open, the Opposition, the Orient,

the outback, the pack, take part, the procession, the procession,

the purse, the penalty area, the Pentagon, the people,

the pictures, the pick of, the pole, the Bill, the pits,

the pit of the stomach, take place, the plough, take the plunge,

the Pentecost, the pools, the point, the box, the deck,

the principality, the puce section, the provinces, the public,

the quick, the rubbish, the work, the Regency, the Royal,

the neat race, the remark, the ready, the Saxon,

to be reckoned with, the Redemption, the Reformation,

the Regency, the regions, the reserves, the Resurrection,

the reverse, the night, the Right, the grapes, the rule,

the return of, the Sabbath, the sack, the Blessed Sacrament.

the Holy Sacrament, the salt of the earth, take something

with a pinch of salt, take something with a grain of salt

the same, this same, that same, to scale, talent scout,

the screen, cannot seem to do, make sense

the services, the whole shabang, take a shine to,

the ships, talk shop, take sides, the sidelines, the small hours,

the small of the back, the Smoke, the Big Smoke, the Sun

in soul of, the splits, the spotlight, the stage, the stand

the States, the sticks, the stocks, take stock, the last straw,

the final straw, the supernatural, the system

the thinker; "can, your twits do someone a good turn

xx, XX, put two and two together, get un)&&(sted

in unison, come unstuck, have the upper hand.

Two plans, the twist, the ultimate, take umbrage

The Upper House, the year, the Virgin, the vote, the storm,

the web, the thin end of the wedge, the yield, the West,

the wet, the wheel, the white, the whip hand,

the world, the worlds, the wings, the legend, the world.
THOU, THE, time zone, take account of, take advantage of, the all clear, the Almighty, take something amiss, the ancients, the apple of your eye, the ants, the Ascension, the Axis, the ballet, the bar, the bear, the bench, the bend, the beat, the bedroom, the blues, the wild boar, go by the board, get tagged, make a bull fight, have a bone to pick with, make no bones about, close to the door.

the boot, to boot, the bottom line, the box, the button, top bypass, take the bull by the horns, the brush, the whole caboodle, take care of, get the cat's whiskers, the shroud, two the other cheek, the chip, the church, the city, the cloth, the coast is clear, the cold shoulder, the Common, the common market, the Commonwealth, the community, the Confederacy, the Continent, the continent.

the Creator, the Cross, the Crown, the Crucifixion, the creche, the Crusades, the cross, the cutting edge, the dark, the Dark Ages, the day, to date, the deceased, the definite article, the disease, the dish, take a dim view of, the dog days, the draft, the drill, it drizzles, it is drizzling, it drizzled, the elements, the eleventh hour, the enormity of, the entirety, the environment, the envy of, the episcopacy, the epitome of, the Establishment, the executive, the facts of life, the faith, first, the Far East, the Father, the fees, the field, the firing line, the flat, the flesh, the floor, the flower of, the flies, the field, the former, the fray, the front line, the fairies, the future, the fuzz, the gift of, the gnat, the Galaxy, the gallows, the gentleman, the gloaming, the globe, the go-ahead, the Goodhead, the grapevine, the gutter, the headline, the heat, the heaven, the hubbub, the hive, take hold, take to your heels.
take heed, take to your heels, take the helm, the high seas, to the hilt, the Holocaust, the holy of holies, the Host, the idea, the image of, the jars and tins, the incarnation, to all intents and purposes, take issue, the jet, the judiciary, tie the knot, the Labour Party, the land, the last, the last of, the late, the latter, turn over a new leaf, the least, take your leave, the left, the left, take liberties, the lie of the land, the like, the limelight, the lion's share, the Lords, the lot, the low down, the Lowlands, the Madonna, the Mafia, the major, the money, the masses, the matter, the Messiah, take the back, the Midlands, the military, the millennium, the mob, the mob, the full monty, the money, the multitude, the naked eye, the Nativity, the Net, the news, the never-never, the nick, the norm, take note, the rub, take someone for a ride, take something on, read, take something in your stride.

# 287 + 3 + 2

turn up trumps, turn a blind eye # 292