

**BULLETIN NO. 1,  
PRELIMINARY STUDY OF  
FAMILY RESEMBLANCE IN  
HANDWRITING PP. 6-49**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649264742

Bulletin No. 1, Preliminary study of family recemblence in handwriting pp. 6-49 by Jone E. Downey

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UNIVERSITY OF WYOMING

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DEPARTMENT OF PSYCHOLOGY  
BULLETIN NO. 1

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PRELIMINARY STUDY  
OF FAMILY RESEMBLANCE  
IN HANDWRITING

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BY

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LARAMIE, WYOMING:  
THE LARAMIE REPUBLICAN COMPANY,  
PRINTERS AND BINDERS.  
1910



## TABLE OF CONTENTS

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	<i>Page</i>
I. HUMAN INHERITANCE .....	5
1. Methods of Investigation.....	6
a. Descriptive .....	6
b. Statistical .....	6
c. Analytical .....	8
II. THE INHERITANCE OF HANDWRITING.....	11
1. Historical Orientation .....	11
2. Causes of Resemblance in Handwriting other than Inheritance .....	12
III. EXPERIMENTAL INVESTIGATION .....	13
1. Material .....	13
2. Method .....	14
3. The Subjective Element in Judgments on Handwriting Resemblances .....	15
a. Collection D .....	15
b. Collection A .....	16
c. Results of Test with Tables.....	18
4. Varying Ability of Individuals in Determination of Handwriting Resemblances .....	20
5. Degrees of Resemblance.....	25
a. Collection D .....	25
b. Collection A .....	32
c. Collection H .....	37
d. Collection L .....	43
IV. GENERAL CONCLUSION .....	49

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in the context of public administration and financial management. The text notes that without reliable records, it is difficult to track the flow of funds and ensure that resources are being used effectively and efficiently.

2. The second part of the document addresses the challenges associated with data collection and analysis. It highlights that gathering accurate and timely data can be a complex task, often requiring significant resources and expertise. The text suggests that organizations should invest in training and technology to improve their data management capabilities. Additionally, it stresses the importance of ensuring the privacy and security of the data collected, as this information can be sensitive and valuable.

3. The third part of the document focuses on the role of technology in modernizing operations. It discusses how digital tools and platforms can streamline processes, reduce errors, and enhance communication. The text mentions that cloud-based solutions and data analytics can provide valuable insights into organizational performance and help identify areas for improvement. However, it also notes that the implementation of new technologies must be carefully managed to avoid disruption and ensure that staff are adequately trained to use the new systems.

4. The fourth part of the document discusses the importance of collaboration and communication. It states that successful outcomes often depend on the ability of different teams and departments to work together effectively. The text suggests that regular communication and the sharing of information are key to achieving common goals. It also emphasizes the need for clear roles and responsibilities to be defined and understood by all team members.

5. The fifth part of the document concludes by summarizing the key points discussed. It reiterates that a combination of accurate record-keeping, effective data management, the use of technology, and strong collaboration are essential for the success of any organization. The text encourages organizations to continuously evaluate their processes and make adjustments as needed to stay competitive and meet the needs of their stakeholders.



# PRELIMINARY STUDY

OF

## FAMILY RESEMBLANCE IN HANDWRITING

### I. HUMAN INHERITANCE.

In the biological discussion of heredity, attention has been concentrated largely upon non-human inheritance, data for the study of which have been gathered from observation of plant and animal life. Little attention has been given to the problem of human inheritance. The former problem, so much less complicated than the latter, and of such great practical importance in the breeding of animals, is open to direct observation in a few or many generations and in certain aspects lends itself so readily to experimentation that it is little wonder that work should have commenced here rather than with human inheritance.

None the less, popular interest in the resemblance between the members of the same family has always been great. Literature, history and anecdote have preserved a certain amount of material that has attracted attention. Moreover, modern work in scientific sociology has brought to realization the immense importance of an understanding of the laws of human inheritance if society is ever to succeed in solving certain pressing difficulties. The adoption of proper social regulations, not to speak of educational ideals, must depend upon an accurate understanding of the relation between character and inheritance and character and environment. The effects of inbreeding and the possible inheritance of disease must be determined by an understanding of the laws of heredity. The modern movement of Eugenics seeks definitely to arouse the public conscience as to the importance of cultivating and elevating the human breed in accordance with the generalizations of science. The movement points a growing interest of the times.

A brief résumé of the methods employed in the study of human inheritance may be of value. First of all, a distinction must be drawn between physical inheritance and mental and moral inheritance. The first would deal with such details of the physical make-up as stature, color of hair and eyes, cephalic index and the like. The latter would be concerned with such mental characteristics as musical capacity, memory, power of reasoning and such moral traits as generosity and industry. Of course, in a comprehensive research a further attempt would be made, namely, to correlate physical and mental inheritance, to show, for example, that delicacy in tactile discrimination—a mental trait—accompanied great flexibility of the hand—a physical trait.

Research in human inheritance offers, as has been previously suggested, great difficulties, the principal one being the difficulty of obtaining accurate data covering more than two or three generations. Such a difficulty can, of course, be overcome by the keeping of records for future use. Again, this difficulty may be overcome to a certain extent by the application of the methods of statistics to a large number of persons and the attempt to deal with fraternal resemblance rather than with paternal resemblance.

blance. The second difficulty is that of determining human traits which permit accurate measurement. This second difficulty is much less insistent in dealing with physical than with mental inheritance and, accordingly, we have excellent studies on the laws governing the inheritance of stature, eye-color, and other physical traits, while accurate studies upon the inheritance of mental and moral traits are still lacking, although the ground has been broken. Moreover, the development by quantitative psychology of methods of mental mensuration is very encouraging.

#### 1. *Methods of Investigation.*

Before a detailed discussion of the methods of study of human resemblances is given, those methods may be roughly described as descriptive, statistical, and analytical.

##### (A) THE DESCRIPTIVE METHOD.

The earlier treatments of the subject of human inheritance were largely descriptive. Such a treatment, for example, is found in Ribot's book entitled "Heredity" (16), the first edition of which was published in 1873. The author's purpose was to gather from history and scientific reports instances showing the transmission of some trait or other. The whole range of mental characteristics is covered from inheritance of sensorial qualities, such as undue sensitivity to tickling, to the inheritance of artistic and volitional aptitudes. This descriptive treatment is supplemented by what Ribot calls the "Laws of Heredity," including (1) Direct Heredity, where the child takes equally after both its parents (blended inheritance) or, as is more frequently the case, where it resembles more specifically one of the two parents, which results at times in cross-heredity, in which the son resembles the mother and the daughter the father; (2) Reversional Heredity or Atavism, which occurs frequently between grandfather and grandson, grandmother and granddaughter; and (3) Collateral, or Indirect, Heredity, which consists in resemblance between individuals and their ancestors in the indirect line. Ribot also considers apparent exceptions to the laws of heredity in relation to the so-called "Law of Spontaneity."

##### (B) THE STATISTICAL METHOD.

The application of the statistical method in the study of human inheritance was first attempted by Galton in the '60's.

Galton was interested in establishing, in his book entitled "Hereditary Genius" (8), a standard scale of human ability. To do this, he made use of the well-known Law of Error, or Deviation from the Average, a law which states that deviations center about a mid-point and are equal in number above and below the mean. By careful analysis of biographical data, Galton estimated the number of "eminent" men at a given time to be as 250 in a million, or as one to four thousand. The "illustrious" men would be still more rigidly selected as one to a million or to many millions. Working downward, Galton obtained his measure of mediocre or average ability, below which he determined a descending scale corresponding to the ascending one and ending with idiots, about 280 to a million. Galton argued that if it should be found that "eminent" or "illustrious" men are clustered in families, the conclusion would be that ability is hereditary in these families. Such a conclusion Galton reaches after a detailed study of the families of English Judges, the families of Statesmen, Commanders, Literary Men, Men of Science, Poets, Musicians, Painters, and Divines. He says further: "The general uniformity in the distribution of ability among the kinsmen in the different groups is strikingly manifest. The eminent sons are almost

invariably more numerous than the eminent brothers, and these a trifle more numerous than the eminent fathers. \* \* \* We come to a sudden dropping off of the numbers at the second grade of kinship, namely, at the grandfathers, uncles, nephews, and grandsons. \* \* \* On reaching the third grade of kinship, another abrupt dropping off in numbers is again met with, but the first cousins are found to occupy a decidedly better position than the other relations within the third degree." (8:309.)

Galton's studies were continued in "Natural Inheritance" (10). He worked out in further detail the Law of Deviation from the Average and applied it specifically in a discussion of resemblances among related persons in stature, eye color, artistic faculty, and disease. A detailed application was found to necessitate a transmutation of female into male measures in order to determine the position of the mid-parent. Galton distinguishes between the parental center and the racial center, from both of which variations occur in both directions and works out his law of regression. "Each peculiarity in a man is shared by his kinsmen, but *on the average* in a less degree. \* \* \* This apparent paradox is fundamentally due to the greater frequency of mediocre deviations than of extreme ones, occurring between limits separated by equal widths." (10:194.)

In general, Galton's name is associated with the so-called "Law of the Average Contribution of each separate Ancestor to the Total Inheritance of the Offspring." Put briefly, this law states that the parents each contribute one-fourth to the inheritance of an individual, the grandparents one-sixteenth each, the great-grandparent one-sixty-fourth, and so on in an infinite series.

The statistical method has been still further developed by Karl Pearson. The Huxley lecture, delivered by him in 1903, was entitled, "On the Inheritance of Mental and Moral Characters in Man and Its Comparison with the Inheritance of the Physical Characters" (15). In this investigation Pearson confined himself to fraternal resemblance because of the ease with which material could be collected under such conditions. From 800 to 1,000 pairs of brothers and sisters were classed by teachers under Pearson's directions. The mental characters selected for measurement were general ability, vivacity, assertiveness, introspection, popularity, conscientiousness, temper, and handwriting. The following conclusions were drawn: "The physical and psychological characters in man are inherited within broad lines in the same manner, and with the same intensity" (15:204). Again, "By assuming our normal distribution for the psychological characters we have found, not only self-consistent results—linear regression, for example, as in the case of inheritance of intelligence, but we have found the *same* degree of resemblance between physical and psychological characters. That sameness involves something additional. *It involves a like heritage from parents*" (15:204). The fraternal and paternal resemblance is found roughly to be about .5 for both physical and psychological characters. Pearson warns the reader that the quantitative results so obtained apply only to the averages of a large number, not to individual cases.

Thorndike has carried out a similar investigation upon fifty pairs of twins (19). He found the resemblance of twins in the traits studied to be approximately .80 or .75 to .80 in amount, a much stronger resemblance than he found to exist between pairs of brothers and sisters who were not twins.

The attempt to work out, quantitatively, coefficients expressing the resemblance for different degrees of kinship is closely related in the methods used to Correlational Psychology, which seeks to determine the coefficient of correlation between different mental traits in the same individual, the correlation, for example, between all forms of Sensory Discrimination and General Intelligence. The requirements of a good method for