Probabilistic Distribution of Human Events (Probabilistic Karma)

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May 7, 2019

1 Theory and Hypothesis

Karma is originally a religious concept, which means action, work or deed; it also refers to the spiritual application of Newton's Third Law, Cause and Effect, where intent and actions of an individual (the Cause) influence the future of that individual (the Effect). Good intent and good deeds contribute to good Karma and future happiness, while bad intent and bad deeds contribute to bad Karma and future suffering. It has been very popular since long, and many claim the validity and manifestations of it.

However, there are other interpretations of Karma as well. Social Science introduces a concept, *History repeats itself*, which, if perused, is a secular and academic interpretation of Karma. According to this, history is a record of periodic recurrence of similar events, in different time intervals. Human actions create similar circumstances, thereby necessitating the repetition of actions or events of similar nature, in every time frame. Mathematics presents a probabilistic interpretation of Karma. In statistics, the probability distribution, *Standard Normal Distribution (Bell Curve)*, as displayed in Figure. 1, captures the behaviour of most of the events and situations in the universe (hence the name *normal*). The large sum of (small) random variables often turns out to be normally distributed, contributing to its widespread application. Its validity is well proven.

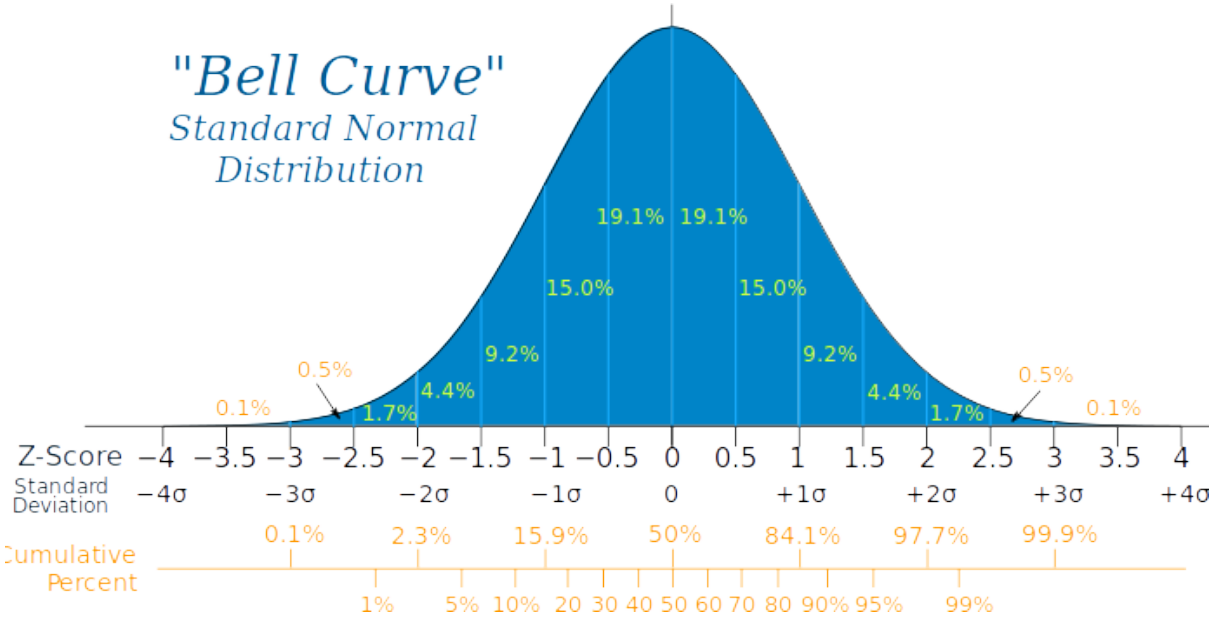

Figure 1: Standard Normal Distribution (Bell Curve)

All events and actions from every human to have ever lived since the dawn of human civilization constitute a set of human social events. Following the Bell Curve theory, the occurrence of each event from this set has a probability associated with it. When I act, if the nature of my action is new, its added to this set, but if its already *in* the set, then the probability of that particular event (action) increases. Much of the actions that are normal, i.e., those whose event-points lie within the first or second standard deviations are those which are most probable of occurring. Such *normal* actions are the most common among people. Those actions which are rare to find, i.e., which are positive and negative extremes lie away from the centre. Consequently, those who commit these rare actions are

also rare. Now, more an action is committed, more it drifts towards the centre, and this acts as progressive reinforcement. But, given that the normal events occupy the centre, it leads to the conclusion that such normal actions are the most probabilistic. Therefore, if every human action (event) is recorded and plotted, it would probably assume the shape of a Bell Curve.

Going by the human behaviour, any event encourages its repetition, which is also referred to as group behaviour, under some circumstances. Kindness encourages kindness while hatred encourages hatred. Thus, any committed event increases its chances of being repeated, through any of the member of the human species, in any time frame. This leads to the statement, History repeats itself. The nature of that event is passed on through family, friends and generations. This is similar to Karma. According to Karma, when a person acts, she is destined to be the recipient of a similar nature act in the future. If she commits an immoral act, she is destined to be the recipient of the same in the future. Previously, I've mentioned that upon acting, the probability of repetition of that event increases. Therefore, any event triggers a chain reaction, wherein this act is likely to be repeated. The actor, among many others (who may or may not have committed a similar act in their past) become recipients of this very act. Thus, this probability, when viewed from an individual perspective, is ignorantly interpreted as Karma.

However, committing an action is itself probabilistic. A rare action has equal probability of repetition compared to the normal ones, if committed, i.e., rare actions, if and when they are committed, do influence others to commit the same. However, their perpetuation and sustenance decays fast, as people naturally drift towards the normal centre. And, given the rarity of such actions, the attitudes they represent are rarely retained. We do witness random acts of kindness, but rarely. However, if a normal act is committed, it doesn't demand much energy from the actor to sustain it or the attitude that accompanies with it. Therefore, the chances of it being committed, and people being recipients of it, is naturally increased, drifting more towards the centre [as in Figure. 1].

Coupling this with Karma, if a person commits a positive act, then no doubt, it will be replicated by others, but its hard to sustain, unless there is constant reinforcement. This is where the general social attitude matters. Each society has a unique distribution. Over time, this external reinforcement might change the nature of the person itself. And therefore, there is also the case wherein, culturally, certain types of action might be more probable. However, given that it cannot be isolated from the world, it is bound to gradually decline. Reverting back to Karma, if a malevolent act is committed, it too will be replicated by others towards others. Therefore, in an event set comprising a mixture of positive and negative events, a person who has committed a positive action might be recipient of a negative action, i.e., he might not get what he deserves, and vice versa. In the case when an undeserving person receives more than what he deserves, people ignorantly and incorrectly regard it as luck. But, in fact it is an **interplay of probability.**

Further, a person committing positive action is generally someone who is mature, responsible or simply a benevolent citizen. This inner alignment of values and morals is visible in their personality, attitude towards others, or in their actions. Many times, certain traits are misattributed. A completely neutral, or even an undeserving person is regarded as malevolent, or vice versa, without a deep evaluation. In some cases, bad

intentions are disguised as positive actions. These are the cases of false positive data instances. Therefore, looking at all these misattributed events it can be concluded that even Karma is never accurate. A rare self-occurrence or self-repetition of an event doesn't prove its validity. It just proves that Karma is probabilistic at best; no one is destined to receive anything in return, especially in proportion to the nature of their actions and attitudes. What one receives is a matter of probability of that action, at that particular instance of time and space.

Considering the large expanse of human and natural history, the actions and events, rather than their impact on the actors is important. An action when committed increases its chances of being repeated. An anti-state protest is a common example, which happens across the world, under different but similar circumstances. The surreptitious involvement of any non-state actors in instigating such protests isn't unusual either. Many contemporary nations are guilty of such clandestine activities, though they reject such accusations bluntly. Subservient activities are as old as human civilization itself, with it being available even in coded form (*Kautilya's Arthashastra*). Wars, protests, suppression etc. are events that are common in human history and hence have greater probability associated with them. Their next occurrence is not a matter of if, but when and where.

2 Social Experiments

2.1 Social Contagion of Ethnic Hostility[1] - a case study

In a recent study [1] conducted in Europe among the Czech-Slovakia population, it was evident that the decision of first time actor(s) largely influenced the behaviour of the successors. According to the research, hostility towards ethnic minorities is contagious and the acceptability of destructive behaviour towards them can easily change depending on others' behaviours. "Social norms regulating anti-social behaviour are very fragile if this behaviour is aimed at ethnic minorities," according to the researchers.

The study was conducted in eastern Slovakia, a district with a large Roma ethnic minority, in 2013, based on a game in which the players - 327 school children from the majority ethnic Slovak population aged 13 to 15 - first received 2 Euros each. Then they had to decide whether to pay 0.2 euros to reduce their rival's funds by half - a "destructive" choice - or whether to keep the payoffs unchanged.

Next, in groups of three, they played against potential rivals represented by a list of 20 typical Slovak majority or Roma minority names, with all three players making their choice one after another. The hypothesis that susceptibility to follow peers becomes magnified when harm is done to ethnic out-group members compared with co-ethnics was tested. The results were striking - it pointed out a significant influence of peers in decision-making on doing harm to the minority. If the choice of the first child was peaceful or cordial towards the minority, only 19 per cent of the second decision-makers were hostile. But a total of 77 per cent of second decision-makers showed hostility if the first child to choose had been hostile. Among the third decision-makers, only 18 percent were destructive if one or both their predecessors were peaceful, but 88 percent were destructive if the previous two showed hostility. Besides, the participants saw hateful behaviour towards the Roma as more socially acceptable if somebody else treated the Roma with

hate. The influence of prior decision-makers on the current ones becomes clear through this case study.

While this study is specific to the Slovak-Roma population, the majority-minority differentiation, however, isn't provincial. Universally, there is differentiation based on ethnicity, race, religion, sex, caste, etc. And, the basis of this study can be safely applied universally, while being confident of similar results. This study broadly conveys two things: One, the more an action is committed, its chances of being repeated also increases. A destructive behaviour encourages the same, and a positive behaviour encourages the same as well. Also, the actor, along with many others are likely to be the recipients of such action. Two, each culture has its own set of events and therefore a unique probability distribution of events.

2.2 The impact of Group membership on Cooperation and Norm Enforcement [2]

This paper reveals that group membership restricts the general set of nature that a person is exposed to, thus influencing their future actions accordingly. I had mentioned that the initial trigger is crucial, and this is what happens in this experiment. All these social dynamics at play leads to variations in probability distributions of human nature. It also reveals certain points:

1. Member compatibility with the social structure is a large determinant in the influencing the actions of the member
2. Determinant of the nature of actions we'll be recipient of, along with many other factors.
3. The group/social dynamics leads to variations in probability
4. Influence and ripples of the actions and reactions you get depends not only on the group you interact with, but also the spatial and temporal variations.

The commission of actions of a particular nature is spatially and temporally distributed. So, when you act, there is a probability which drives it, which varies. And since this world is intricately connected, one event influences the other, which contributes to the variations. So, there are a lot of variables that Karma doesn't consider, but simplifies the conclusion as "you get what you deserve", while disregarding the nuances of dynamics of various factors - social, psychological, historical, etc.

This means that you will act how most others around you, act. Your actions are therefore probabilistic, and this probability is influenced by numerous factors: psychological, social, economic etc. So, in this simple experiment if they are able elicit probabilistic behaviours, then consider this world, where the diversity is boundless. The probability distribution could vary so much, thereby leading to a myriad of actions. And, *one or more* of these actions happens to be of the form that Karma describes. But, there are many more possible actions which Karma fails to explain, or predict.

Karma is basically retrospective. It simplistically concludes from historical events, and its focus is especially on a reduced set. It cannot. Merely saying that "you'll get

what you deserve" isn't concrete. As this action which you "deserve" will have always have a probability of being repeated, it doesn't concretely validate Karma.

2.3 The Stanford Prison experiment [4]

This really was an interesting experiment.

The conclusion which I drew from it was that the initial distribution of nature depends on a reference/context - group membership, natural instinct etc. This distribution can have a direct or reverse influence. The behaviour of the guards was influenced more by their *inverse peers*, the prisoners, and less by their own peers. In case of the prisoners it was both: the Ringleader, guards.

The initial probability distribution of actions was dependent on the roles that they were randomly assigned. This brings in another important point, that the initial trigger is necessary. Of course, following the segregation, there wasn't much in-group influence, or there was, in a negative way (especially with respect to guards). Further, this experiment was conducted in a high tensed environment, which made the direct/inverse influence more pronounced. Since the environment was highly vindictive in nature, highly charged, any action had increased ripples or repercussions, which makes the probability more compounded.

The prevalent aura influences the behaviour of most (or all), thus creating a unique probability distribution for that system. When in an environment its hard to be someone else of a radically different nature, or a deviant. May be one can, if (s)he doesn't manifest their thoughts or feelings, but keeps it inside, or manifests in an invisible/insignificant way. But, the probability distribution does account for this, as explained in the standard normal distribution. Your psychological state is largely influenced by the environment, and drives your actions, which has social significance, thereby increasing the probability of the nature of your actions.

Karma also makes use of the concept of reincarnation and multiple lives. However, even considering the validity of the theory of reincarnation doesn't support karma strongly. Assuming that a person has committed crimes in his previous life, and that he is suffering in his current life, there is no explicit causal strong relation between the two lives. Probability allows that a person is susceptible to negative actions, and more an action is committed the probability of its repetition increases. I'm sure there are many others who have committed crimes in their previous lives but are leading happy or successful current lives. What does Karma tell about that? Because there isn't enough experimental evidence to verify such cases, there are large holes in the theory of Karma, which are so conveniently neglected.

My theory subsumes the known version of Karma. Once an action is committed, its probability of repetition increases, which implies that more people, including the actor, are susceptible, or "destined", to be a recipient of a similar action. Now, is it the destiny of the minority to face gratuitous retribution at the hands of the majority, even if most

of them aren't guilty of anything? What was their past Karma for having deserved this? This hatred and violence against the minority doesn't seem justified, because it isn't. Karma cannot justify such actions, unless there is a large-scale experiment which actually explores the previous lives of all the minority population, which corroborates the (mis)deeds (cause) of their previous lives with the state in their current life. This primarily happens because of a trigger and accumulation of probabilities that follows. This is History Repeats Itself and the Probabilistic Distribution of Human Events, a subset of which is ignorantly interpreted as Karma.

3 Programming Implementation

Through implementation by way of programming, I plan to verify the presented theory that human actions and their consequences are bound by probability, which is the major determinant, given the personality and external conditions as variables. I've designed a modular agent-based artificial society, with three primary modules:

1. **Actor**: This module contains two programs:

   (a) **Human** (actor,agent) is a program which mimics a real individual: It has a *Personality* (derivative of the Nature program), belongs to a *Group*, *Commits Actions*, resides at a *Spatial location* and is also capable of *Change* and *Replication* (Reproduction program). Using the personality and external environmental conditions as variable inputs, the list of possible future actions along with their probabilities can be determined. And all these actions triggers many more such possible actions.

   A **Change in the Personality** occurs under following conditions:

   i. *Interaction* with other Human programs: When a Human interacts - commits an action and becomes a recipient of another action - with other Human programs, the personality changes, subject to the Nature of the action(s) and whether its the Actor or Recipient.

   ii. The *Connections* a Human maintains, with other like-minded or opposite-Natured Human programs, also influences the Personality.

   iii. The *Phiosophy and Nature* of the Group the Human is part of further also influences the Personality.

   For easier interpretation, this is similar to new colours arising out of intermixing of RGB. The initial distribution of these personalities and their respective degrees is determined by an appropriate probability distribution function.

   The **Reproduction** program in the *Action* module is triggered when two Human programs (although sex isn't specified in the Human program, it is assumed to be between a male and a female) mate (or merged in this case). I've taken into consideration the genetic progression of 50% traits from each of the parents, and the element of *mutation*.

   Starting with a few thousands of such individual programs, an initial corpus of the action set can be generated. They will definitely be inaccurate initially, and will be far from resembling real human action-event set. But, upon continuous execution, following several generations, they might begin to converge on the real world scenarios.

   (b) **Group** represents the Group a Human belongs to, which can be religious, political, etc. Each Group has a *Nature and Philosophy* (derivative of the Nature program), a *History*, *Muscle and political Power*, the degree of *Unity*, a *Leader* and list of members.

The **Nature** of the Group is a weighted average of its individual members. The **Philosophy** represent the core value(s) of the Group, and is influenced by its History. The **History** of the Group is a set of Events which provide a context to its Philosophy, and stands as a proof which (in)validates it.

A Group influences its members' Personality and their spatial distribution. It is assumed that most members tend to spatially converge towards their Group's centroid. Spatial and Personality proximity between the members of a group is assumed.

In the case of inter-group conflicts, the *Unity* and the *Muscle & Political powers* of each group determines the outcome of the event.

2. **Action**: This module contains four programs:

   (a) **Action** captures the interaction between Human programs. It has a *Nature*, which defines it. An Action influences the Personalities of the actor and the recipient differently, subject to their individual personalities.

   I also keep a count of the total number of committed actions, and probabilities of the 3 broad categories - Benevolence, Indifference and Malevolence (as explained under the Nature section - of Actions. These probabilities, in turn, provide an approximate estimate of the overall Nature of the society, since actions ultimately determine the trend of a society.

   Now, once an action is committed, it is added to the event set, if not already present. If already present then the probability of the nature of that action increases. Once the event set is large enough, it should assume the shape of a Bell Curve, upon plotting. This can be corroborated with the real human historical data.

   (b) **Connection** is a program which builds links between Humans, who are similar in Nature. In [3], three classes of social influence models: *Assimilative Social Influence*, *Similarity based Influence* and *Repulsive Influence*, are explained. In the similarity biased influence model, only sufficiently similar individuals can connect, bond, influence and mate with each other. I've adopted this very model in my program.

   (c) **Event** is a program which captures any Natural or Social events which might occur, or any historical events which have occurred, concerning a Group. The following Events can be represented by this program:

      i. Events with **Malevolent or Indifferent** Nature:
         A. **Natural hazards** such as earthquakes, floods, cyclones, can be (and they actually are) linked to supernatural and superstitious elements, after which they can have social impact.
         B. **Social hazards** such as Indo-Pak partition genocide,

C. **Inter-group conflicts** such as Hindu-Muslim conflict in India, Jews-Muslim conflict in Jerusalem, Catholic-Protestant in Europe, Scientific-Religious conflict all over the world.

D. **Protests or Demonstrations** such as Feminism, Anti-corruption movement, LGBT movement.

E. **Revolutionary opposition** such as Marxism, Leninism, Maoism.

ii. Events with **Benevolent** Nature:

A. **Positive developments**: The recent Indian Supreme Court verdict regarding IPC s. 377 was a positive event in the history of LGBT community in India. In 2014, when the Indian govt. declared the Jain community as a religious minority after decades of struggle, it was a win for Jains in India.

(d) **Reproduction** is a program which captures the *action* of procreation between individuals and creation of new generations. Again, the nature must be similar in order to mate (adoption of *Similarity based Influence* model).

In the algorithm, I've ensured the 50% genetic transmission condition from each parent. Further, I've also included a *mutation algorithm*, which attempts at minor mutation in the traits, which are then passed onto the offspring.

3. **Nature**: This module contains two programs:

(a) **Nature**: This program acts as a base for every other module, and the programs Human, Group, Event, Action, and History make use of an instance of Nature.

The Nature is classified into the following base dimensions, each of which approximately capture an aspect of the human/social nature. The Human's Personality, Group's Nature and Philosophy, Action's Nature, Event's Nature and History's Nature are all a derivative of these base dimensions:

i. **Dimension 1**: **Morality (1) and Immorality (0)** represent the two extreme ends of the spectrum of the *values* an individual, or a society, holds;

ii. **Dimension 2**: **Integrity (1) and Fragility (0)** represent the will-power, commitment and internal strength of an individual;

iii. **Dimension 3**: **Coexistence (1) and Survivalism (0)** represent the capacity of an individual or a society to *live and let live*; the degree of altruism and selfishness;

iv. **Dimension 4**: **Rationality (1) and Irrationality (0)** represent the degree of logic/superstition, the open-mindedness of an individual or a society;

With these 4 base dimensions, there are 16 possible combinations of Nature:

i. **Morality, Integrity, Coexistence, Rationality - 1111**

ii. **Morality, Integrity, Coexistence, Irrationality - 1110**

iii. **Morality, Integrity, Survivalism, Rationality - 1101**

iv. **Morality, Integrity, Survivalism, Irrationality - 1100**

v. **Morality, Fragility, Coexistence, Rationality - 1011**

vi. **Morality, Fragility, Coexistence, Irrationality - 1010**
vii. **Morality, Fragility, Survivalism, Rationality - 1001**
viii. **Morality, Fragility, Survivalism, Irrationality - 1000**
ix. **Immorality, Integrity, Coexistence, Rationality - 0111**
x. **Immorality, Integrity, Coexistence, Irrationality - 0110**
xi. **Immorality, Integrity, Survivalism, Rationality - 0101**
xii. **Immorality, Integrity, Survivalism, Irrationality - 0100**
xiii. **Immorality, Fragility, Coexistence, Rationality - 0011**
xiv. **Immorality, Fragility, Coexistence, Irrationality - 0010**
xv. **Immorality, Fragility, Survivalism, Rationality - 0001**
xvi. **Immorality, Fragility, Survivalism, Irrationality - 0000**

These 16 combinations of Nature are then broadly classified into 3 categories: **Benevolence, Indifference and Malevolence**, which are colour coded with **Blue, Green and Red**, respectively, for easier interpretation:

i. **Benevolence (Blue)**: 1, 2, 5
ii. **Indifference (Green)**: 3, 4, 6, 7, 8, 9, 13, 14
iii. **Malevolence (Red)**: 10, 11, 12, 15, 16

(b) **History** is a set of *Events* involving a Group, which influences its Philosophy.

With varying initial condition(s), the action probability distribution graph will probably assume varying shapes, but with a different arrangement of actions, or may assume another shape altogether. I can even set a custom initial environmental or societal condition, by altering the constants of the probability distribution function and derive custom simulations and distribution of the action-set. Prof. Stephen hawking, in the final chapter of his book, *The Grand Design*, explains the self determinism of the human world with a simple example: Given an initial condition, with a certain set of laws, the organisms in it can self generate. This would give us an understanding as to the parameters and conditions required to drive the real human world along desired paths, which, retrospectively, can help in human behaviour prediction.

References

[1] Michael Bauer et al. “Social Contagion of Ethnic Hostility”. In: (2018).

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[3] F LeRon Shults et al. “A Generative Model of the Mutual Escalation of Anxiety Between Religious Groups”. In: (2018).

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