

Ants, music and toilet paper: A group behaviour explanation of panic buying

Pictures of empty shelves in supermarkets, where toilet paper is usually plentiful, is one of the striking images associated with the Covid-19 pandemic. Some consider this panic buying and irrational behaviour. The disease does not appear to require the particular use of the tissues



But if we consider an experiment with ants, and an experiment in choosing hit songs in pop music it is possible to get a better idea of how people make individual decisions when in groups. Individual behaviour is influenced by the decisions of others. As a result, the behaviour of any individual and a group made up of individuals can change quickly and unexpectedly.

Ants

Consider a colony of ants. Place two mounds with the same amount of food equidistant from the entrance to the ant colony. Then watch as the ants move to one mound or the other. Food taken by the ants is replaced to ensure the two mounds remain with the same amount of food. You may expect the ants to be indifferent to the two mounds. A 50:50 split in ant traffic would seem rational.

But that is not what happens. Most ants will go to one mound. The ants communicate with each other through chemical secretions. The experience of one ant in finding food will affect the decision of other ants. Still, there are a few rebels will go to the other mound. Slowly there are more rebels. Then, unexpectedly, traffic will change rapidly to favour the other mound.

Remember, both mounds are replenished so they are equally tempting. There seems no reason for the sudden change in behaviour. Over long periods, ant traffic will favour one mound and quickly switch to the other.

Their behaviour changes quickly and for no apparent reason. This is a classic [experiment](#) outlined by Paul Ormerod in his 1998 book *Butterfly Economics*. It is used as the basis of explaining how decisions by individuals are affected by the group they mix with. The fickleness of ant behaviour is used by Ormerod to help explain why it is difficult to control crime, divorce and family formation, and voting intentions between political parties.

Ormerod argues that in each case the behaviour of a society can change quickly between law-abiding to crime-ridden, from favouring long-lasting marriages to high divorce rates, and from favouring one political party to another. Using some diagrams showing how several factors can interact with each other, the dominant behaviour of a group can switch from one state (e.g. law-abiding) to another (crime-ridden) quickly. In fact, a group can be in either state given the same value of any single factor. For example, a society may be in either a law-abiding or a crime-ridden state even though the level of income is the same. There is not a simple, linear relationship between income and crime. The relationship is complex. It is non-linear and can suddenly break from one state to the other – just as the ants move from one mound of food to the other.

To understand what this may have to do with toilet paper, we should consider popular music.

Music

Another classic [experiment](#) looking at how people make decisions when in groups was published in 2006 by Matthew Salganik, Peter Sheridan Dodds and Duncan Watts in the journal *Science*. The authors wondered why hit pop songs were so dominant in their popularity compared to songs that were not hits but were considered equally good. And yet it was difficult to predict which song would be a hit. The dominance of the hit song and the simultaneous unpredictability of it seemed contradictory.

The authors set up an experiment where people were asked to choose their favourite song from a list of songs they were unlikely to have heard before. They could then download the song they had chosen as the best. Some were given no guidance. Others were shown how many downloads had occurred previously for all the different songs.

Those who were given guidance were more likely to favour one particular song from the list. Those not given guidance were more likely to have a wider spread of choices. Furthermore, the song more likely to be chosen by the groups that was prompted with information of the downloads by others, were more difficult to predict. To be clear, the best songs rarely did poorly and the worst songs rarely did well.

The authors argue that the experiment shows that “experts fail to predict success not because they are incompetent judges or mis-informed about the preferences of others, but because when individual decisions are subject to social influence, markets do not simply aggregate pre-existing

individual preferences. In such a world, there are inherent limits on the predictability of outcomes, irrespective of how much skill or information one has.”

To understand what this may have to do with toilet paper, let’s combine the ant experiment with this one.

Ant music

If a group of people can shift rapidly from one state to another and also the dominance of one opinion can be influenced by knowing the decision of others, why can’t a society shift quickly from not worrying about the availability of toilet paper to panic buying? You see the shelf with toilet paper get a bit low, then hear others are buying more than usual. Suddenly, everybody is trying to get toilet paper. As in the music experiment, your individual decision to buy toilet paper is influenced by knowing what others are doing. And as in the ant experiment, there is not a smooth transition from toilet paper plenty to toilet paper scarce. Behaviour changes quickly. It can be discontinuous.

Panic buying is not irrational. It is a function of how decisions are made in groups. Simply supplying more toilet paper may not solve the panic. The market for toilet paper is broken. Other solutions may be necessary. Rationing sales. Shaming hoarders. Calming words from a trusted authority. Each of these may have more effect in changing demand for toilet paper.

It’s easy to dismiss people as sheeple. It’s more complex. They like [Antmusic](#).

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