

**theguardian**

# Why cows like to chew over things together

Research on cattle behaviour shows that they like to eat, stand and lie down at the same time as others

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**Marc Abrahams**guardian.co.uk, Monday 12 December 2011 11.30 EST

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Like-minded: cattle tend to synchronise their behaviour. Photograph: Graham Turner for the Guardian

A British-American team of scientists has produced a study called [A Mathematical Model for the Dynamics and Synchronisation of Cows](#). They were driven partly by the intellectual challenge, and at least a little by an [EU council directive](#), which mandates "that cattle housed in groups should be given sufficient space so that they can all lie down simultaneously".

Their key insight, the team says, was to realise "it is biologically plausible to view [cattle] as oscillators ... During the first stage (standing/feeding), they stand up to graze but they strongly prefer to lie down and 'ruminates' or chew the cud for the second stage (lying/ruminating). They thus oscillate between two stages."

The researchers "modelled the eating, lying and standing dynamics of a cow using a piecewise linear dynamical system ... We chose a form of coupling based on cows having an increased desire to eat if they notice another cow eating and an increased desire to lie down if they notice another cow lying down." This, they say, led to at least one unexpected discovery: "[We] showed that it is possible for cows to synchronise less when the coupling is increased."

The researchers – [Mason Porter](#) and [Marian Dawkins](#) at Oxford University, and [Jie Sun](#) and [Erik Bollt](#) at Clarkson University in Potsdam, New York – published their work recently in the physics journal *Physica D: Nonlinear Phenomena*. In the 31-year history

of that journal, this is the only article specifically about cows. (Cows do have an accepted, very humble place in the history of physics: an old joke, beloved by physicists and a few others. The joke starts (usually) with a physicist offering to solve a dairy-related problem for a desperate farmer. The physicist walks to a blackboard, and draws a circle. "First", he says, "we assume a spherical cow ...").

The team built upon the work of earlier, fully serious bovi-mathematical scholars.

In 1982, PFJ Benham of Reading University published an innovative study called [Synchronisation of Behaviour in Grazing Cattle](#). Brennan studied a herd of 31 Friesian cows, recording the behaviour of each every five minutes during daylight for 15 days. His short paper – it's only two pages long – ends with the declaration: "Studies of behaviour synchronisation are evidently relevant to the management of grazing cattle."

Porter, Dawkins, Sun and Bollt also looked beyond the bounds of cow analysis, gaining insight from a 1991 monograph by AJ Rook and PD Penning of the AFRC Institute of Grassland and Environmental [Research](#) in Hurley, Maidenhead. Rook and Penning called their report [Synchronisation of Eating, Ruminating and Idling Activity by Grazing Sheep](#), and published it in the journal Applied [Animal Behaviour Science](#). They reached four conclusions. I will mention only one, as it has wide applicability: "Start of meals was more synchronised than end of meals."

Thanks to Ig Nobel prize winner Lakshminarayanan Mahadevan for bringing the cow synchronisation research to my attention.

- Marc Abrahams is editor of the bimonthly [Annals of Improbable Research](#) and organiser of the Ig Nobel prize

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[noblackbox](#)

12 December 2011 09:48PM

I was told that if you lie down in a field of cows they will approach you until the lead

cow's face is centimetres from yours, at which point you blow in its nostrils and all the cows run away.

I really want this to be true, but I don't want to become a man-killed-by-cows statistic

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[readerinn](#)

13 December 2011 12:14AM

Response to [noblackbox](#), 12 December 2011 09:48PM

I wouldn't test it too.

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What's so amazing about animals who live in groups that they do the same thing at the same time? Imagine if one cow wants to walk and another wants to sleep. This won't work and just cause a lot of confusion.

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[boomshakakhan](#)

13 December 2011 03:53AM

What amazes me is that we house these noble beasts in an environment that, minimally, has barely enough room for them all to lie down simultaneously.

Shame on us.

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[oldbrew](#)

13 December 2011 09:13AM

Back in the day they called it a herd instinct.

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[Snarlygog](#)

14 December 2011 03:42PM

Response to [boomshakakhan](#), 13 December 2011 03:53AM

Cattle are over wintered in sheds as they turn the fields into a quagmire.

What do they do that earns them the epithet of noble ?

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