



Ethan Bernstein

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# THE UNINTENDED EFFECTS OF OPEN OFFICE SPACE

Associate Professor Ethan Bernstein's new study uses wearable technology to unearth some important new discoveries about open office architecture.

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As of this July, what do Isaac Newton, Charles Darwin, and Associate Professor Ethan Bernstein have in common? They've all published in Philosophical Transactions of the Royal Society B.

Bernstein's new paper, "The Impact of the 'Open' Workspace on Human Collaboration", is featured in the newest issue of the renowned British research journal, the oldest scholarly journal in the world dating back to the 1600s. This latest issue was organized around the theme of how architecture impacts collective behavior. As its title suggests, Bernstein's paper empirically examines the effect of open office architecture on employees' interpersonal and electronic interactions. Working with co-author Stephen Turban, who was initially introduced to Professor Bernstein by late HBS professor David Garvin, their study yielded surprising findings about the potentially negative impacts of removing spatial boundaries in the workplace. Professor Bernstein took time below to talk about the genesis of this intriguing research and its implications for the office architecture of the future.

### How did your interest in this research first come about?

**Ethan Bernstein:** There's a lot of interest in open offices because so many of us work in them, and we have very strong opinions about them. They were all the rage in the late 20th century, and academic attention in them followed suit. But most of those studies were based on survey data (self-reported, by definition) and intangible outcome variables (like employee satisfaction). Those are fine for understanding individual perceptions, but aren't so good at quantifying real behavioral responses and organizational performance outcomes from open offices. The gap between perceptions and real outcomes has now become the battleground for employees and employers on this issue.

Much of my research is about the impact of workplace transparency (the observability of employee activities, routines, behaviors, output, and/or performance) on employee productivity and collaboration. So these questions interested me, as did new ways of answering them. Technology—in this case specifically, wearable technology—has enabled us to track individual or dyadic interactions at a really refined level. It's not just "did you do this?" but "you did X, Y, and Z at this particular time with these other people." If I was going to dive



## **“THERE'S A LOT OF INTEREST IN OPEN OFFICES BECAUSE SO MANY OF US WORK IN THEM, AND WE HAVE VERY STRONG OPINIONS ABOUT THEM.”**

What my co-author Stephen Turban and I were ultimately able to produce is the first work I know of that looks empirically at how interactions between individuals in headquarters change when employees move from cubicles to really open spaces.

### **How did you decide to structure the methodology?**

**EB:** This study would not have been possible without my collaborator and close friend from the days of my doctoral studies, Ben Waber. After finishing his doctorate at the MIT Media Lab, Ben co-founded (and is CEO of) Humanyze, a company that uses sociometric badges to help companies use people analytics to improve how people work. These badges, and the multiple sensors inside of them, allow careful tracking of interactions in the workplace. Ben was kind enough to partner with us to help us measure, carefully and without affecting behavior, the interactions of individuals in two different company headquarters before and after a shift to truly open offices.

As with any research at HBS, we were careful: the same people were tracked before and after the move; we asked them to wear the devices for a long enough period of time that we were confident we were measuring meaningful, not idiosyncratic, differences while not going so long that we ended up capturing noise from other changes in the working environment; we were careful to compare apples-to-apples by ensuring, for example, that interactions were measured at the same time in the (quarterly) business cycle; and so on. If there was one thing our reviewers focused on, it was making sure that our results were robust!

### **Did you have an idea of how the study would turn out?**

**EB:** Somebody once told me that business academics are the janitors of our field. Because out in the real world, practitioners do crazy and interesting things as managers and designers of their organizations. And then we, the academics, come around and try to figure out, rigorously, what had a positive and negative impact on performance and other behavioral variables. We collect and organize everything, plow through the data, and then develop theories that will help predict behavior in the future.

I don't know that I had a clear hypothesis about this research question at the start. You hear so much said about how much people don't like open offices, but there's also so much said about the vibrancy of an environment when you open space and data up, about the collisions and interactions that will happen there. For me, the promise of open offices was at least as compelling as the traps. Would everyone bustle with productive collisions, or simply put their big headphones on and become numb to the space? In reality, I was torn. One of the best parts about being a professor is that you can study the questions that are most interesting to you and the business world. And the mystery behind this question was a key reason this was so interesting to me.

### **If you were a Fortune 500 manager and you read this paper, what would be your reaction?**

**EB:** It depends on what you're trying to achieve with open offices. My understanding, from speaking with real estate managers and architects, is companies' conversations about the built environment tend to start with cost per square foot. If the question is how to lower costs, the answer is more people per square foot, and open offices will always have the upper hand on that dimension.

Nonetheless, many managers and executives seem to believe that open offices will both lower costs and improve interactions. My hope is that this research throws a bucket of ice water on the idea that there's no tradeoff—that you will naturally both save in real estate costs and get more collaboration from this kind of design. If the cost motive were sufficiently strong, there might be other things a manager could do to mitigate the potential negative impact on interactions: hybrid or flexible spaces; train people differently; allow work-

from-home time; set a tone and work culture that tries to deprogram us from our natural instincts to respond the way these organizations did. There are those who love open offices, in part because organizations mitigated the downside with other deliberate managerial actions.

## “MY HOPE IS THAT THIS RESEARCH THROWS A BUCKET OF ICE WATER ON



That said, in general, I do think the open office space “revolution” has gone too far. If you’re sitting in a sea of people, for instance, you might not only work hard to avoid distraction (by, for example, putting on big headphones) but—because you have an audience at all times—also feel pressure to look really busy. Indeed, all of the cues in open offices that we give off to get focused work done also make us less, not more, likely to interact with others. That’s counterproductive, at least given the rhetoric of open offices. Architects aren’t clueless to this, of course. It’s just that the cocktail of other considerations, like cost per square foot and the promise of innovative collisions, got too powerful for them to try to pull back from those extremes.

### Any closing thoughts?

**EB:** Ultimately, human beings get agency to decide how to use any space, so design is only part of the equation. I was recently in a meeting with several senior managers from a company known for its open office environments. One of them told me that the research did not reflect his experience—that they found open office spaces encouraged dynamic interactions and collective behaviors. His colleague then piped up and pointed out that all of the “noise” (as an indication of interactions) actually comes from behind the closed doors of the separate, team-based spaces. That should make us wonder: if all the noise is coming from behind closed doors, isn’t that where people are interacting and working well together? Wouldn’t you maybe want more of that?

Here is perhaps one way to summarize the shift in perspective that is suggested by this work. In the past, when it comes to workplaces, office design (and many other artifacts of organizational life) have catered to the observer and not the observed. Unfortunately, it’s the observed who make our organizations successful. So maybe everything, from office design to people analytics, ought to shift slightly in mindset to optimize for their work more often.

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Guest

21 days ago

I have tried all models over the years (home, open space, closed office). There are factors (nature of work, hierarchy, space available, age of employees) that come into play and should be considered in the design decision. What works best is a "mixed model". Grouping "open spaces" with divisions by worker profiles (computing, graphic artists, sales, support, admin) is the most efficient of having your cake and eating it too. Also in any open space model, provide for "private spaces" where workers can transition for personal matters.

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0



Bleuec

67 days ago

I don't have a sociology degree nor have I studied (clinically at least) this topic formally. I have however run a mid-sized company and a smaller company in all three disciplines studied. (Open, closed and home) My findings are pretty basic. I get more done at home. Not commuting (live in LA) was massive. I did a much better job doing brutal tedious work. I was not as collaborative nor did I find myself involved in new ideas. My assistant is the opposite. It has made her worthless. She does less and desperately needs to be told what to do. The type of diverse data is the same across all three. If I started a 50 plus person company tomorrow I would employ a multiple environment space. . Not being chained to one desk, in one location 12 hours a day allows people to gravitate to what works for them. Also, at the highest levels, I would offer work from home but get this crazy idea (sarcasm) it would be just like the other

idea. 3-2 or so, 3 in the office, 2 out. The world is not homogenous, don't try to adjust as if it is. Managers need to learn to ...manage.

Like Reply Share 0

**Kate Wiczorek** 91 days ago



workplaces in this research, along with faulty assumptions of how people actually collaborate. As a Workplace Strategist at an architecture firm focused on corporate interiors, we advocate for taking the time to understand an organization in order to provide specific and unique recommendations on the types of spaces employees need to function and thrive.

Read my full analysis of this Harvard Study at Work Design Magazine here:

<https://workdesign.com/2018/08/a-workplace-strategists-response-to-the-harvard-research-on-open-plans/>

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**Jithin Thomas** 152 days ago

If you think open spaces work best for creative activities, researchers and people with deep common interest/passion in an activity and involves collaboration like gaming centers etc and you can develop a similar culture for your office;

Then you much observe most conversations in a gaming center happens through messaging and researchers like virtual boards, forums and chat rooms to discuss rather than a "TABLED MEETING ROOM" or "OPEN SPACE" because online option gives the necessary time lag to think before you have to reply and you can choose who you want in the group. In-fact they actually developed these tools out of necessity. They also aid in natural group/team formations.

If people actually loved common spaces you would have seen people working together in common spaces as laptops with long battery life made it very possible for people to do so. That is how evolution works.

How comfortable are you in developing a conversation with a person in an open park taking to a bunch of other people

vs  
talking to a bunch of people you are travelling with in a bus or train(closed space).

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**Guest** 156 days ago

Lots of pro's and con's coming from this story. We just recently completed surveys for 2 open office plan location and both had a greater than 80% approval rating. This all depends on change management and do you do a good job in creating the right number and types of space for open floor work and private work. If you are just focused on cost reduction (our error in the past) and are not looking at how people work as the starting point for the office plan it will fail and you end up with results as this article states. In the case of the 2 offices above we didn't start with cost in designing the office plan we started with how do people work and how does that need to change based upon the business needs. We talked with all levels of employees who would be impacted by the change.

I just visited a company while in Shanghai. They have moved to an open office plan and also have >80% approval ratings. Again they weren't just focused on cost reduction, they build the space to accommodate both open floor working and the right types of privacy space—from the individual phone call to the 2-3 person meeting space to the larger meeting space. They also had a strong change management program in place to ensure they captured how people were working and needed to work to meet the business needs.

If you do the change management correctly the office design will work, if you mess that up then you are in trouble.

Don Watson

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**James Madden** 113 days ago

Some cultures are geared more to group action while other are more individual centered. My opinion, of course -- I could be wrong.



Guest

182 days ago

I couldn't agree more. The open office space is exhausting and causes mental drain



will swing back to private work areas with collaboration zones.

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Guest

187 days ago

An excellent article. I could not possibly disagree more with the detractors of the article. They have either not worked in an open office or not been a knowledge worker. I have been in 3 different open office environments and have promised myself to never work in another one. The author is correct. The open office environment discourages, not encourages, open communication. Even more than that, it produces errors, jealousies, and chaos. Knowledge workers simply cannot think clearly in an open office environment, especially if headphones and ear bobs are not allowed (which they were not allowed in my third open office environment). I can work a 10-12 hour day in an office and be less tired than working an 8 hour day in an open office. And I can get more done and be more creative in an office environment.

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MSHapedStrategy

188 days ago

As others here, I am concerned that numerous articles are now reporting that a Harvard concludes that the open office concept suppresses interactions. We know nothing from the study about the quality and sophistication of the spaces where these (only) two organizations relocated.

The problem is the binary choice implied: open or closed. We know nothing, for example, of the sophistication of the design of the space where people moved and where interaction stopped. If the "open" office had no choice of settings for different kinds of work, simple consideration of fellow workers might suppress the "distraction" of F2F interactions. If the "closed" office's walls were used for the display of information that sponsored interaction but the "open" office erased them, then no wonder F2F disappeared.

If, as is apparently the case, the designers of the new space underthought the mission, didn't understand the collected data, and overlooked best practice, the reported result (for just these two cases) is inevitable.

I'd propose a mission for the researchers: Now that you have data on both spaces (and I assume much more data than just the quantity of interactions of different types), what recommendations might you make to designer and client to modify the space for more effective interactions? Make those modifications and then report back.

Of course, the underlying assumption here is that F2F interactions are important to the performance of the client organization. That is, do we know if the organization's performance improved when everybody stopped walking from office to office to communicate and actually got down to business in a more efficiently connected environment?

Like Reply Share

Stephen Johnston

189 days ago

This study should not be about open office spaces. It should be retitled:

"How to take a socially sensitive topic that will appeal to a global market, and, by using technology, demonstrate how variable data from an uncontrolled environment, and from an extremely insignificant representative sample, can provide misleading information, and at the same time, high levels of confidence to readers who argue the negative, all because the article leverages the credibility of Harvard University"

The study opportunity from this article, where the empirical data will have greater accuracy, is in the tracking of news feeds and social media blogs where the content of the article will be used and varied from its original to promote negative sentiment. What is extremely sad is that this information impacts so many people's lives as it negatively impacts change. Ironic is the reference to Darwin at the start of this press release, however, I am sure some people may argue that some species are better off being isolated and not changing.

Global professionals who provide office workspaces know that there are simply too many variables in creating successful workspaces. It is not as simple as measuring the changes from two workplaces and determining that this data accurately

represents the global workspace population. If all human, physical, technological, architectural and cultural variables had been factored into the multiple regression, the data would have been dismissed as non-conclusive and the reported percentage changes would have been statistically insignificant.

Happy, healthy and successful workspaces are predominately about culture and



The data from sensors on a neck pendant will have a degree of repeatable inaccuracy and be discrete in measurement. If the technology measured the amount of happy conversation, or the amount of positivity, or the amount of creative benefit, or cognitive stimulation etc, maybe the study results would have demonstrated a different % change. The reality of it is, workplaces are complex and multidimensional, and if you truly want to measure the benefits of a new work environment ASK YOUR PEOPLE. You shouldn't need a neck pendant to tell you if you have been successful or not.

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**Guest** 191 days ago

Open office plans are can vary dramatically. They can range from awful such as a big table where everyone works. For a few months I worked in an environment like that and it was almost impossible to be productive. Other designs are very sophisticated with lots of areas for privacy, collaboration rooms for small groups, noise masking, avoidance of everyone sitting in a line of sight of everyone else, etc. Successful designs are much more likely if employees have as much to say about the design as do the managers. I've seen lots of open office spaces and see few employees wearing headphones in spaces designed around the work flow of the employees themselves.

Like Reply Share 0



**Guest** 192 days ago

In my opinion, open office is more effective when you have your supervisors and management in same open office without any walls or separated offices, this will lead to feel more confidence, loyal, clear integrity and on same time, employees will feel their manager or leader is a part of their team who works with them as a member not as a boss, open office builds ambitious and dynamic characters, the leader who leads to success is the one who leads within the team not on the team.

Like Reply Share 0



**i\_harshada** 194 days ago

Open office can lead us to a creative chaos. Sometimes, some things depend upon human involvement and definitely this concept can be linked to social experimentation studies.

Looking forward to study more such links and bonds...

[www.harshadapathare.com](http://www.harshadapathare.com)

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**Guest** 195 days ago

This is just naive. A professor is involved in this? Here's what's wrong:

1. You take a group of people accustomed to activity in one configuration (cubicles) and put them into another (open office). We can all hypothesize that some level of disruption occurred. But that must be tested in a rigorous way.
2. How much of an effect is due to ANY change, and how much is due to a specific change? What would happen if a random half of those people were moved into offices with doors? How about moving open seating people into cubicles or into offices with doors? Then, how about moving those with doored offices to the other two configurations? Does the observed effect fade over time?
3. What were the people told? Were they told this is an experiment? We're they told this was temporary, or were they told this was a permanent change? If they were told that it was an experiment, were they told that it was to test the desirability of open seating?
4. Does job function of the people matter? Does similarity or synergy of job function matter? Does seniority matter? Does type of work matter?

I'll give you one counter example: you see those TV images of trading floors with people elbow-to-elbow sitting at row after row of desks? What if people executing and supporting trades could not interact with each other quickly and ad hoc?

You get the point.

This "study" is just a sliver of a full study. As such, it is "fake research".

Like Reply Share 1 reply 0



"Fake research" is when you declare information as fallacious because the story you heard from a third party about it had some holes in it.

Like Reply Share 0



**Guest** 197 days ago

The make mention of the MIT Media Lab were I knew Ben Waber from while I worked there for 10 years. When I started all the staff and faculty generally had their own offices. In the past few years they moved to an open office style in the headquarters area because they out grew the space. When you walk in it is usually filled with people that have headphones on. I know If you give people an office. They will love it. You give them a long table down the center of the room with 20 people at it. They usually don't love it. What if they just gave people a choice? What would they choose?

Like Reply Share 0



**Guest** 197 days ago

I am inclined to agree with this paper when the open offices are laid out in such away that people are basically touching elbows, like the picture behind the article.

I have noted over the years that open offices with defined boundaries (cubes configured properly) are used, employees become team members through familiarity, then go off to work spaces (open and separated) to compete team tasks. Rather than throw the work over the fence and hope someone else will get it done.

Many variables.

Like Reply Share 0



**mcmahon\_nerlich** 198 days ago

This is a poorly described study - Harvard brand notwithstanding. Possibly the authors are hiding the detail of the study, however there is no indication that the authors chose even a 'standard' open plan office environment, let alone best-practice environment in which to study the effects of the transition to open-plan. Only ' Fortune 500 company' - as if that assures us the design was exemplary. The authors are not making the data available on the published site, and no plans are provided, to check any of their assertions or conclusions. All designers know that to transition successfully to open-plan office, you require a range of spaces to replicate the environments that you are replacing, to allow break-out spaces, private spaces and work-group spaces, space to make a private phone-calls etc etc the list goes on. Everyone knows this (except the authors). You require these spaces in addition to the desk space, and from the description of the study 'the overall floor plan was the same size and the desks at the same physical distance'. This indicates no support spaces were provided at all. The authors are disingenuous at best and knew the likely outcome of the study. The authors are not making the data available therefore the study won't be able to be tested by anyone else which surely is the true measure of valuable research. This study will surely quickly fade from memory and deservedly so.

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**Guest** 202 days ago

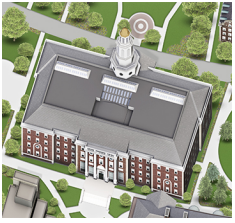
The idea that noise equals a productive interaction is very simple and not taking into consideration how human beings work, think and really interact. So open plan does not necessarily create an open mind even if some people like it does not mean it is productive. Create the right environment and you create the right state of mind is not a one dimensional exercise.

Like Reply Share 0

**MarcioAMReyes** 203 days ago

I have a creative mind and I no longer likes silence for my creativity awaken. But the essential is the fact that we have a lot of minds thinking and interacting, sometimes other thinkings flowing in the air, in the middle of the "caos" of voices, can help some other person to have a innovative idea! Thanks a lot! Sucess!

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