



## How to Cope with Working in an Open-space Lab?

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This is a "Post-Print" accepted manuscript, which has been published in "European Review"

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Please cite this publication as follows:

Pautasso, M., & van der Werf, W. (2017). How to Cope with Working in an Open-space Lab? *European Review*, 25(4), 679-687. DOI: 10.1017/S1062798717000266

You can download the published version at:

<https://doi.org/10.1017/S1062798717000266>

# 1 **How to cope with working in an open-space lab?**

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9 ° The positions and opinions presented in this article are those of the authors alone and are not  
10 intended to represent the views or scientific works of EFSA.

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12 Submitted to the *European Review*, 2 March 2016 (revised 8 March 2017)

13

14 Short title: working in an open space lab

15

## 16 **Abstract**

17 Open-space labs and research environments are increasingly common worldwide. They are  
18 supposed to facilitate interactions among researchers, but can be disruptive to those who need to  
19 be in a quiet environment in order to concentrate. This problem is increasingly felt across the  
20 natural, medical and social sciences, has a clear interdisciplinary and cross-cultural relevance, but  
21 has been the focus of limited attention. We propose some simple suggestions for researchers  
22 struggling in an open-space lab, based on a literature review and our experience in open spaces in  
23 various labs and countries (Australia, China, France, Italy, the Netherlands, Switzerland, the UK and  
24 USA) as undergrads, PhD students, postdocs, researchers and (W. van der Werf) professors. Our aim  
25 is to help researchers working in open-space offices and labs with some straightforward solutions  
26 that will make their life and work easier.

27

28 Keywords: communication, creativity, MOOC, open-plan office, perceived comfort, privacy, research,  
29 science, teleworking, training

30

31 **Introduction**

32 *“We shape our buildings, and then our buildings shape ourselves”* (Winston Churchill)

33

34 Open-space labs, whether dry or wet, are becoming more and more frequent worldwide. They are  
35 promoted because they are supposed to facilitate face-to-face interactions among researchers,<sup>1,2</sup>  
36 but pose a big challenge to those who need to be in a quiet environment in order to focus and be  
37 productive.<sup>3-7</sup> Office designers are seeking to improve efficiency by means of open-space<sup>8-10</sup> but  
38 might have actually ended up facilitating employee communication whether or not this supports the  
39 work to be done.<sup>11</sup> The benefits of easier interactions brought by open-plan offices have indeed  
40 been found to be smaller than the drawbacks of increased noise and reduced privacy.<sup>12</sup> In many  
41 open-space labs across the world there is thus the need for an agreed etiquette to solve this tragedy  
42 of the commons.

43 We propose ten simple rules for working in an open-space lab based on available research and  
44 reviews<sup>13-16</sup> and drawing on our experience in open spaces in various labs and countries (Australia,  
45 China, France, Italy, the Netherlands, Switzerland, the UK and USA) as undergrads, PhD students,  
46 postdocs, researchers and (W. van der Werf) professors. These suggestions will need to be adapted  
47 to each particular open-space lab, depending on its mix of personalities, cultures and habits. The size  
48 of a lab is a key variable here: not all these rules are essential in an office with two-three colleagues,  
49 two of whom tend to be away for field work most of the time. But if you have to focus in a lab where  
50 on average other ten people are also there daily from before dawn to late night, then some kind of  
51 open space etiquette needs to be developed. Our aim is to help researchers working in open-space  
52 offices with some straightforward solutions that will make their life and work easier.

53 **1. Be quiet and inconspicuous, as if you were in a library**

54 In an open-space lab, whispering should be the rule, so as not to disturb the concentration of other  
55 people<sup>17</sup>. Research has shown that intelligible conversations between colleagues are the main  
56 source of noise annoyance in open-space offices.<sup>18-20</sup> Avoid thus starting conversations from the  
57 other end of the lab, but move first close to the person you wish to reach.<sup>21</sup> Also, there is no need to  
58 be loud when talking to someone who is close by (or is on the other end of the phone/skype  
59 connection). By speaking quietly, you will be more likely to be answered quietly. You can greet your  
60 colleagues just as effectively without shouting good morning or goodbye, by beaming with your  
61 eyes, smiling and/or waving. Moreover, one of the disturbances in open spaces is visual. If people  
62 around you are trying to concentrate, try to limit moving around exactly when a precarious time-  
63 window of quietness has opened. Think before you move. Grab a mug of green tea at the same time

64 as you check your snail mail pigeon-hole and ask about your systematic literature search strategy at  
65 the library.

## 66 **2. Find a room for meetings, phone calls, parties and gossip**

67 Even if you are considerate, it is difficult to keep consistently a hushed voice during conversations;  
68 meeting and brainstorming rooms are there to be used.<sup>22,23</sup> Research has shown that face-to-face  
69 conversation at a University does not increase by moving people from cell to open-space offices, but  
70 by providing formal (i.e. meeting rooms) and informal (e.g. collaboration events) opportunities for  
71 meetings.<sup>24,25</sup> However, open-space offices can be particularly detrimental to concentration in the  
72 event of extrovert lab members using them to rehearse and perform in front of a mock audience.  
73 You might wish to remind these sociable research fellows that a lab is not a theatre stage. Lead by  
74 example: go to the bar, park or home for emotionally charged behaviour, recollections and  
75 conversations. A quiet open-space lab does not mean that researchers should not find the time to  
76 engage in social activities, getting to know each other and exchanging feedback on their research  
77 projects. It's just that these communication activities will be less disruptive if they tend to take place  
78 outside of the lab.

## 79 **3. Create quiet spaces for people needing them**

80 Quiet spaces should be available for those who need to concentrate, whether they are scholars  
81 intent in interpreting ancient manuscripts, software engineers trying to find a bug in their code or  
82 taxonomists looking for a good inspiration for how to name a newly discovered fungal species. A  
83 research institute with just open-space labs and with no individual rooms will result in people  
84 frequently distracted and interrupted, thus compromising creativity.<sup>26-28</sup> Make agreements and  
85 develop rules about how shared quiet spaces are used to prevent that they are occupied pre-  
86 emptively. Everybody, but particularly a team leader, needs to have private conversations, which  
87 should sometimes remain confidential.<sup>29</sup> Of course having a separate room does not mean that the  
88 team leader should not also spend much of her time in the lab, quietly interacting with individual  
89 researchers. But having a mentor and mentee all the time in the same room (although ideal from a  
90 learning perspective) is likely to lead to some stressful situations.

## 91 **4. Agree on accepted behaviour**

92 Discuss desired open-space behaviour with colleagues and agree on rules. One of the reasons for  
93 noise in open spaces is lack of clarity on desired behaviour. How many PhD students on the planet  
94 are or have been suffering because they have not managed to talk once and for all about open space  
95 manners with their lab-fellows? Express your personal needs and perceived (dis)comfort.<sup>30</sup> Get the  
96 team leader and everybody else involved. Be creative: you might wish to devise a system of flags at

97 every desk: a red flag implies that concentration is required and extra quietness is needed. Or you  
98 could set up an alarm system for excessive noise: ringing a designated bell (or banging a gong) makes  
99 it clear to everybody that silence is needed and people need to reset their voice volume to a quieter  
100 level (or go to somewhere else for their impromptu meeting). Be considerate also regarding thermal  
101 comfort: quietly ask for permission before opening or closing a window, or changing the setting of a  
102 thermostat. A whole day of keeping quiet and focusing can be counterproductive: everybody needs  
103 some breaks.<sup>31</sup> But the problem in open-space labs is that it is often difficult to know in advance  
104 when people will happen to start a conversation about the planned holidays, the film they watched  
105 last night or the thunderstorm forecasted for the following weekend, so that it is impossible to plan  
106 in advance when to work on something that requires concentration and when instead to focus on  
107 tasks that can be tackled also under noisy conditions. Unless there is an agreement about e.g. set  
108 times for social interactions (e.g. 11 o'clock in the cafeteria, 4 pm in the common room), thus  
109 reserving the rest of the day for uninterrupted work.

## 110 **5. Adjust social mores**

111 Chat is the oil in our daily interactions, but never-ending or recurrent dialogue in an open space is  
112 impolite. Make loud people kindly aware that they are disturbing, they might not even have noticed.  
113 When doors and walls between rooms are not sound proof, loud conversations and phone calls can  
114 be disruptive also for colleagues in neighbouring areas. Remind colleagues at team meetings to e.g.  
115 please keep their mobile phones on mute, as if they were attending a chamber music concert. If  
116 chatting anywhere is the rule, place strategic signs requesting silence. A picture enhances the words.  
117 In some countries, people are now used to the concept of a quiet train coach – you could use this as  
118 a metaphor for how you wish your own lab to become. Adjusting social mores to enable focus work  
119 mode without unnecessary interruptions will improve motivation and the overall atmosphere in the  
120 lab. A poor workplace climate has instead been shown to correlate with various undesirable  
121 research behaviours.<sup>32</sup> Of course, discussions on topics relevant to the research going on in the lab  
122 are important and should not be discontinued, just because one is afraid of disturbing other  
123 colleagues.

## 124 **6. Organize courses and summer schools in open-space lab etiquette**

125 Particularly in cultures and for personalities where whispering is not second nature, it is often  
126 difficult to achieve a long-term reduction of the stress caused by noisy interactions in open-space  
127 labs. Formal and informal training might be needed. What about developing a massive open online  
128 course on intercultural open-space etiquette? Has any staff development unit of a research institute  
129 already developed a course for PhD students, postdocs and faculty on how to reduce unwanted  
130 noise in open-space labs and corridors? At the very least, all research group leaders should find the

131 time to give a short introduction about the expected open-space manners to newcomers, visitors  
132 and colleagues from other labs.

### 133 **7. Consider subdividing the lab in one for quiet people and one for loud ones**

134 Despite reminders and training to speak more quietly, some people tend to remain loud because of  
135 their outgoing personality and cultural background.<sup>33</sup> The open office setting may thus not only be  
136 disturbing to people who need a quiet environment, but can also be constraining to people who  
137 function well in a more hustle-bustle environment (having to be consistently quiet so as not to  
138 disturb other people might make them feel despondent and unappreciated). However, people not  
139 fitting with the majority can be helpful in an open-space lab, e.g. if the rule is chatting, because  
140 having someone asking for silence will increase the productivity of everybody, but also if the rule is  
141 lack of vital communication, because having someone used to interacting will make it more likely for  
142 essential communication to happen. Nevertheless, splitting the team in two open-space rooms, one  
143 of which is reserved for those unable to concentrate if other people are loud, might be more rational  
144 than the traditional division of offices for PhD students and for postdocs, or for researchers working  
145 in different fields. If subdividing labs in those for quiet and those for loud researchers implies that  
146 researchers from different departments and disciplines need to be in the same office, then this  
147 would bring the additional benefit of removing some cross-disciplinary barriers, thus favouring  
148 interdisciplinarity.<sup>34</sup>

### 149 **8. Get used to open space**

150 Younger people seem to be less bothered by the setting of an open space.<sup>35</sup> Perhaps, if you get over  
151 the novelty of not having private space to yourself, you will be better able to work productively even  
152 in a chatty environment. You could treat it as an experiment, collect data about your productivity  
153 (and the one of your colleagues) in quiet vs. noisy labs and be surprised to find out that there are no  
154 significant differences, other things being equal? Sometimes, procrastination and distractions due to  
155 social media (rather than noisy colleagues) are the main factors causing lack of productivity. But if  
156 you do find that you tend to achieve more in a silent office, then it can be argued that it is your loud  
157 colleagues who actually need to get used to open space, by learning to be considerate when in the  
158 office.

### 159 **9. Wear a head set to exclude noise**

160 Most people benefit from a headset with music to concentrate better, although this noise masking  
161 effect can differ for different types of music.<sup>36</sup> Of course if your headset music has to be so loud that  
162 it annoys other people in the lab, then you need to go back to rule number one. If you cannot  
163 concentrate with music on, you need a quieter place. Talk to your team leader.<sup>37</sup> Ask human

164 resources to decrease the speech transmission index<sup>38-41</sup> of your lab (e.g. by adding carpets on the  
165 floor, cork panels on the walls, and plants wherever there is an empty corner). If nothing improves,  
166 consider moving to a research lab where these ten simple rules have been implemented.

## 167 **10. Encourage teleworking**

168 If everything else fails, it can help if researchers (whether loud or not) are allowed to work from  
169 home for those tasks that require concentration and can be done elsewhere. Sick absence leave  
170 rates have been shown to be higher in open-space compared to individual offices, thus showing the  
171 need for privacy and quietness created by large offices.<sup>42-44</sup> Teleworking makes sense from an  
172 environmental perspective too. It should be encouraged for tasks such as reading, reviewing, writing  
173 papers, preparing talks/lectures, thinking, answering emails, making phone/skype calls, searching  
174 the literature, marking student essays, developing new courses, recalling ideas, crafting research  
175 proposals, and discussing. Even mentoring can sometimes take place successfully outside of the lab,  
176 e.g. at conferences, travelling to conferences, carpooling from the lab or when walking in the park. If  
177 all these activities were performed outside of the lab, then the lab might actually become the place  
178 to meet, thus making all these considerations redundant?

179 For the moment, health and well-being have been repeatedly found to be higher in individual offices  
180 than in open-plan ones.<sup>45-49</sup> Health is in turn a key pre-condition for a productive environment.

181 Working in a quiet environment is not a sufficient condition for writing a masterpiece, and it can be  
182 argued that noisy places have sometimes led to serendipitous insights that might not have been  
183 achievable by just reflecting whilst strolling in the countryside far away from an airport. However,  
184 not everybody is blessed with the ability to be inspired by loud small-talk and cacophonous settings.  
185 Eureka-like moments need to be nurtured and developed. Research often involves the performance  
186 of tedious tasks requiring the utmost concentration (or creative thinking about how to achieve the  
187 same result just as effectively but automating such tedious tasks). A quiet environment will make it  
188 possible for many researchers to achieve results of better quality by working shorter hours, a win-  
189 win situation for everybody involved, including the families of researchers. We wish all researchers  
190 in open-space offices good luck in finding the solutions that work for them to improve the comfort  
191 and performance of their working environment. We can influence how our buildings shape  
192 ourselves.

## 193 **Acknowledgements**

194 Many thanks to O. Holdenrieder, V. Quéloz and R. Russo for helpful comments on a previous draft.

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335

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