Elaborations on the made corrections:

1. Abstract is now shorter than one full A4 side. Please note that text is carried over to next page due to the size of the heading in the given thesis layout.
2. Corrected (now page 14).
3. Added on page 20.
4. Added on page 24.
5. Corrected (now page 27).
6. Added on page 32.
7. Corrected (now page 34).
8. Corrected (now page 36).
9. Corrected faulty figure references (Now page 38).
10. Corrected (now page 54).
11. Image modified to make point clearer (Now page 58).
12. This is the same as correction 26. Please see comment there.
13. Corrected (now page 61).
14. Corrected (now page 64).
15. Corrected (no page 65).
16. This reference was actually already there - now can be found at the top of page 67.
17. Figure caption text corrected (now page 75).
18. Moved to appendix (now figure A.4).
19. Added clarifying illustrations and updated caption (now page 84). Scale bar is in top left image.
20. Figure zoomed and enlarged (now page 95).
21. Changed wording in caption to hopefully avoid misunderstanding (now page 110).
22. Corrected faulty figure reference (now page 113).
23. Corrected (now bottom page 122).
24. Corrected and actually the entire introduction text (now page 127) was comprehensively improved.
25. Corrected. Note that the modifications were made to all units appearing in inline expressions, i.e., expressions integrated seamlessly in the text. In the case of “displayed” equations, which appear in a dedicated line, the format was not changed as it seemed appropriate.
26. The noted flaws were corrected as follows:
    1. Illustrations of the used MEA layouts and how they relate to the channel indices have been added to the appendix (figures A.1 and A.2).
    2. The following explanatory text was added to the methods section in association with the first occurrence of a network raster plot (figure 2.7):

Throughout this work, and as exemplified in figure 2.7 A and D, excerpts of network activity are displayed in the form of raster plots where each line shows the spike train recorded at a particular MEA channel. In this visualization the channels are sorted by channel index and only active ones, i.e., channels where at least one spike was recorded during the observation window, are shown. In cases where multiple raster plots originating from the same culture are compared within the same figure (for example, figure 2.9), then the channel selection across the shown epochs will be matched (i.e., any channel active during any of the presented epochs will be displayed in all of them). A map describing the link between channel indices and the spatial organization of the respective electrodes is provided in figures A.1 and A.2. It should be noted that, in the case of the 8x8 layout (figure A.1), channel indices represent the coordinates of the electrodes in a rectangular grid and so sorting by the index is roughly equivalent to scanning the electrode array from left to the right. In the case of the HD layout (figure A.2), the channel indices do not reflect the spatial arrangement of the electrodes in the same way. Due to the large number of channels participating in each recording, it was not possible to label each line in the visualization with the respective channel index and so only the first and last channel in the sorted list are shown. Omitting channel indices is common practice in visualizing such multi-channel recordings (for example, [29, 27,40]).

* 1. All occurrences of activity or stimulation maps for the 8x8 layout across the thesis, where a spatial map of the MEA is shown, have been modified to emphasize the fact that the 4 corner sites are actually not actually recording electrodes (see, for example, figure 3.2 on page 59). Hopefully this will serve to facilitate the understanding of how the MEA data shown in the thesis relates to the spatial organization of the array and why indices 12 and 87 are the first and last.

1. The Matlab scripts for generating the raster plots have been examined for errors and it was found that a bug did in fact exist in the sense that the selection of channels to display was made based on whether they were active during the entire recording period (which is typically hours long) and not just during the displayed time window. This bug was corrected across the entire thesis which did result in some changes to the displayed channels but, by chance, not in any case to the first and last one (which usually show 12-87). Please keep in mind that there are cases where the first and last channels are different from 12-86, for example figure 5.7 and most figures in chapter 6 which use micro-cultures in which case a reduced number of channels are in contact with the tissue.

As for changing the y-axis display, a replacement of the channel indices by simple serial ordering has been considered as this approach is sometimes taken in the literature. However, since the spatial organization of the channel indices has been provided and explained this modification was finally not deemed necessary. In the case that the examiner still feels it to be required this amendment may be readily implemented.

1. Caption changed to provide the correct parameters in use.
2. Added axis annotation in figures (pages): 3.2 (), 3.5 (),

Other additions: Text in figure 3.6 (now on page), typos