

# Reasoning About the Unreasonable

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## Abstract

This document shows how to use the `hgbarticle` class, which combines the standard LaTeX `article` class with the `hgb.sty` (Hagenberg) thesis styles. This may be useful, for example, in the case that you wish to publish part of your thesis as a journal article without major changes.

## 1 Introduction

If you wish to write this report in German you should replace the specification

```
\documentclass[english,  
               twocolumn]{hgbarticle}
```

at the top of this document by

```
\documentclass[german,  
               twocolumn]{hgbarticle}
```

Remove the `twocolumn` option for a single-column layout. For simplified quotations use the `smartquotes` document option.

Also note that the top sectioning command available in the `article` class is `\section{}`, i.e., there are **no chapters**! When converting a thesis you thus need to *demote* all chapter commands to sections, sections to subsections etc.

### 1.1 Mathematical elements

This document is typeset in the typical two-column format required by many scientific journals. Unfortunately, the narrow text width often creates problems with mathematical structures [1]. While smaller equations like

$$\bar{\mathbf{M}} = \begin{pmatrix} A * H_{\sigma}^G & C * H_{\sigma}^G \\ C * H_{\sigma}^G & B * H_{\sigma}^G \end{pmatrix} = \begin{pmatrix} \bar{A} & \bar{C} \\ \bar{C} & \bar{B} \end{pmatrix} \quad (1)$$

may fit without any modification, larger structures like the one shown in Equation 2 need special treatment. In this case, the equation was wrapped into a `\begin{figure*} ... \end{figure*}` environment, which produces an unnumbered float object that extends across the full page width. Additional details can be found in the source text.

### 1.2 Graphics and images

Similarly, the horizontal space available for graphical elements is the width of a single column. Thus elements inserted with `\includegraphics{...}` should use the length `\columnwidth` for scaling. An example is shown in Fig. 1 (see the source text for details).

An by the way, the `lipsum` package was used to create the following dummy texts.

$$\begin{aligned}
\lambda_{1,2} &= \frac{\text{tr}(\bar{\mathbf{M}})}{2} \pm \sqrt{\left(\frac{\text{tr}(\bar{\mathbf{M}})}{2}\right)^2 - \det(\bar{\mathbf{M}})} \\
&= \frac{1}{2} \cdot \left( \bar{A} + \bar{B} \pm \sqrt{\bar{A}^2 - 2 \cdot \bar{A} \cdot \bar{B} + \bar{B}^2 + 4 \cdot \bar{C}^2} \right),
\end{aligned} \tag{2}$$



**Figure 1:** Coca-Cola advertisement photographed in 1940 [2].

### 1.3 Bibliography

The use of citations and the compilation of the bibliography works much the same as in the thesis template. The only difference is that `\printbibliography` is used directly at the end of the document.

## 2 Existing techniques

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## 3 Our radically new approach

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## 4 Summary and conclusion

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## References

- [1] Herbert Voß. *Math mode*. Version 2.47. Jan. 2014. URL: <http://mirrors.ctan.org/obsolete/info/math/voss/mathmode/Mathmode.pdf> (cit. on p. 1).

- [2] Marion Post Wolcott. *Natchez, Miss.* Library of Congress Prints and Photographs Division Washington, Farm Security Administration/Office of War Information Color Photographs. Aug. 1940. URL: <https://www.loc.gov/pictures/item/2017877479/> (cit. on p. 2).