

MICRO VISUALIZATION

Data-driven Typography and Graphical Text Enhancement

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ABSTRACT

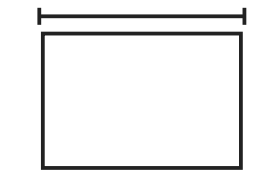
At the intersection of information **VISUALIZATION** and **TYPOGRAPHY** lies the design space of »Micro Visualization«, a family of basic techniques enriching text in regard of its accessibility, comprehensibility, and memorability. We propose a **TAXONOMY** that differentiates specific types of visualizations applied to text design and layout. We elaborate two main approaches to aligning the

visual appearance of a text and its content. The first explores the **ADDITION** of graphical elements embedded into or adjacent to a text, while the other approach explores the visual **MODIFICATION** of a text by means of typographic visualization. For this we evaluate how different techniques can be used as **VISUAL VARIABLES**.

TERM

The term »Micro Visualization« is not being used by the visualization community at the moment. In our approach we use it to describe any kind of visualization that is for example

SPATIALLY SMALL and/or – as it often correlates – with a few number of **DATA DIMENSIONS** or even **DATA POINTS**.



spatially small

$$a = \{ b : [], c : [] \}$$

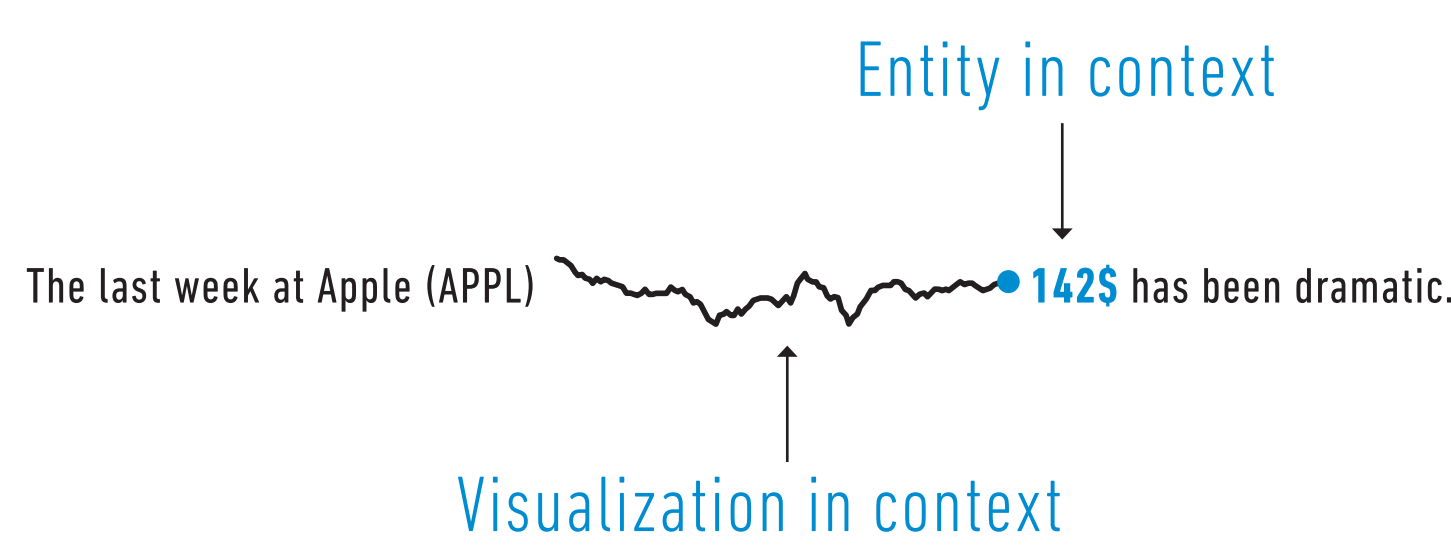
few data dimensions

$$b = [1, 2, 3]$$

few data points

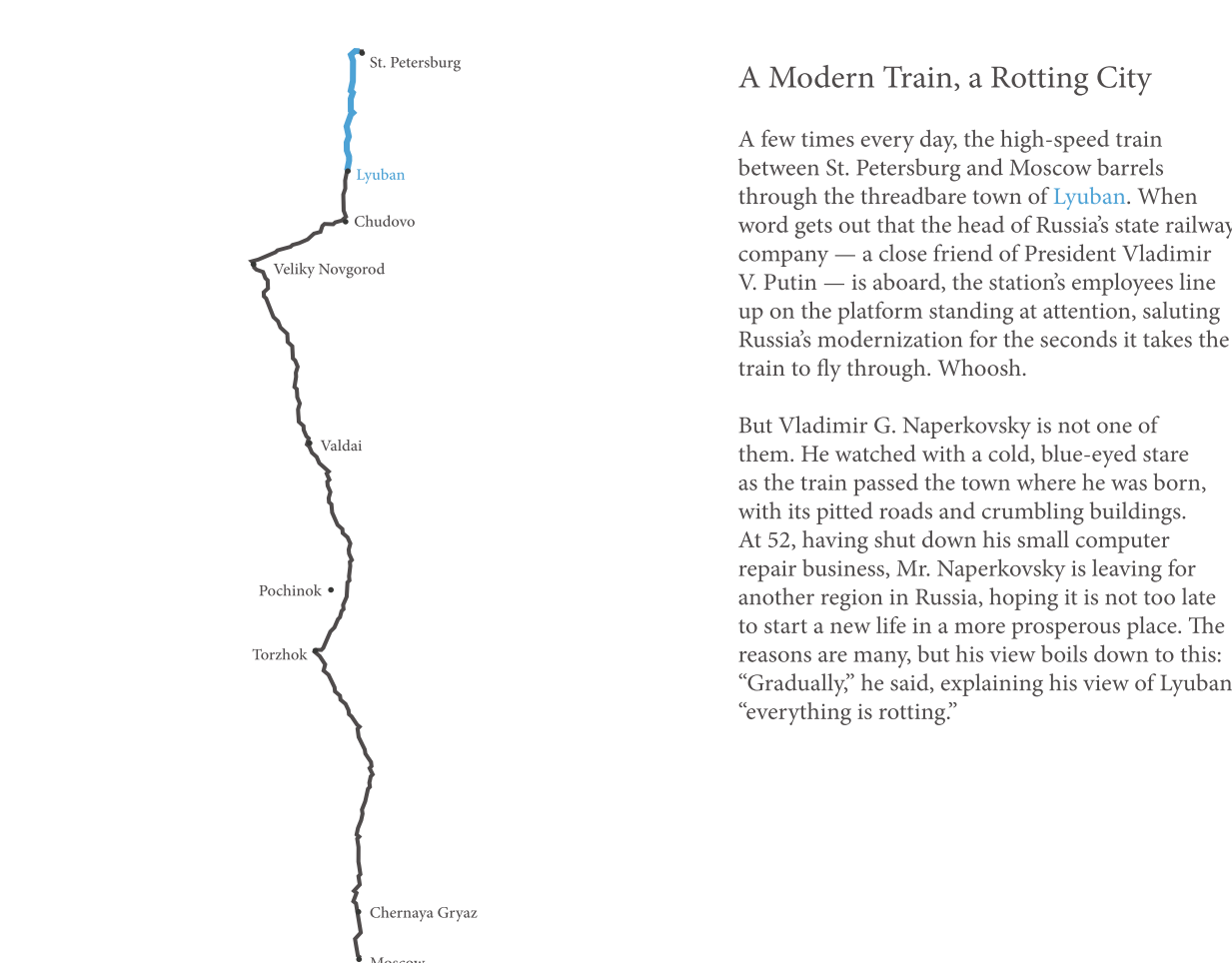
GRAPHICAL TEXT ENHANCEMENT

One example of such Micro Visualization are Edward Tufte's **SPARKLINES**. In their typical form these »datawords« are simplified line charts, which are integrated directly into the text.



The New York Times article »The Russia Left Behind« takes the reader on journey along several cities in Russia. Next to the actual article a minimalistic map is placed on which the current city and the reading (respectively scrolling) position is visually highlighted. And again, the reduction of details on the map is justified by its usage and additional values for the article:

The simplification allows an instant understanding and thus provides orientation and navigation. An **ADDITIONAL DATA** layer is added, which could hardly be described with words.



Advantage and justification for the simplification is the double **CONTEXTUALISATION**. Firstly, the entity is enriched by the additional context, secondly, the visualization can be placed into context at the relevant point within the text. The reading flow stays undisrupted and the traditional switching between graphic and text is not necessary.

DATA-DRIVEN TYPOGRAPHY

Besides the previously described graphical additions to the text, the typographical modification of the amorphous text is another approach. In order to categorise the field we

used Bertin's visual variables and evaluated the **TYPOGRAPHICAL TECHNIQUES** for each channel.

POSITION



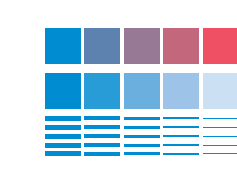
- Kerning / Spacing
- Indentation / Margin
- Alignment
- Superior / Inferior
- Line spacing

SIZE



- Scale

APPEARANCE



- Colour
- Texture
- Opacity

SHAPE



- Typeface
- Case / Style
- Weight
- Width

ORIENTATION



- Rotation
- Underlining
- Strike through

EXAMPLES:

GOOD BYE
GOOD BYE
GOOD BYE
GOOD BYE
GOOD BYE
GOOD BYE
GOOD BYE
GOOD BYE
GOOD BYE
GOOD BYE

ULTRA LIGHT
LIGHT
REGULAR
MEDIUM
BOLD
HEAVY
BLACK

UNIVERS
UNIVERS
UNIVERS
UNIVERS

CELLARDOOR
CELLAR DOOR
CELLAR DOOR

SERIF
SANS-SERIF
Script
24lockfette

UNTERSTRICHEN
Durchgestrichen
Kursiv
KAPITÄLCHEN

TAXONOMY

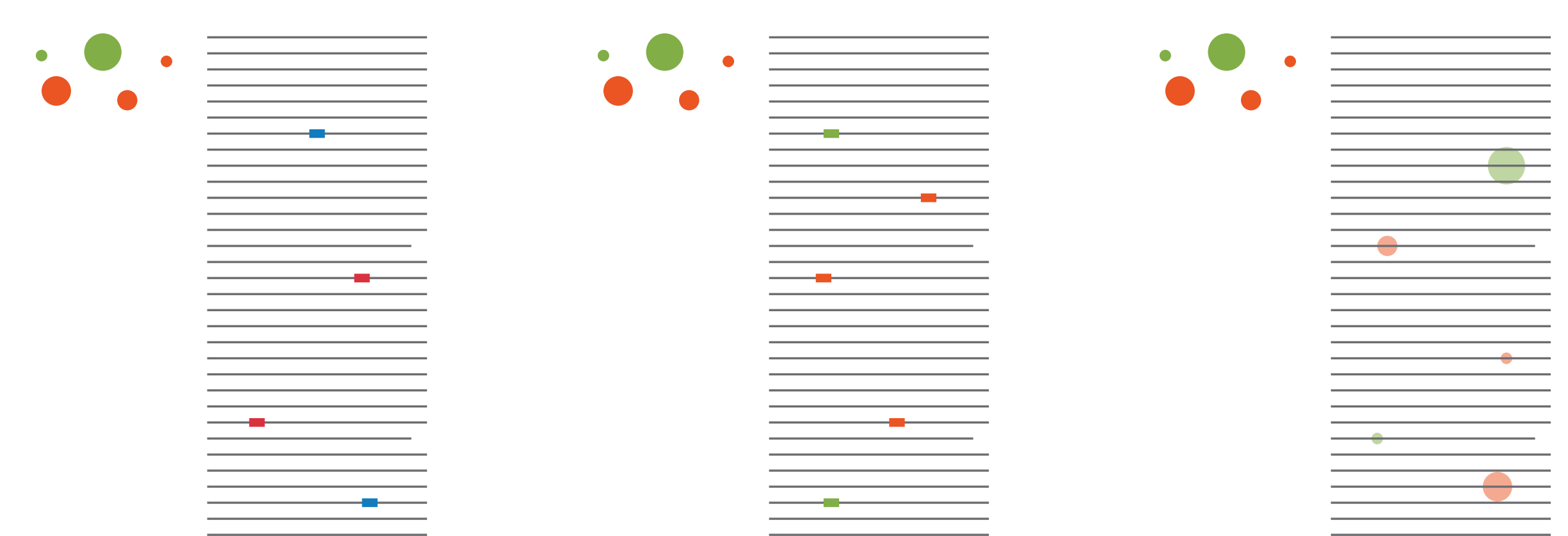
One contribution of this work is the creation of a taxonomy, which allows to **SYSTEMATICALLY IDENTIFY EXISTING WORKS**, empty spots of possibilities, and new approaches for application. The field can be divided into four fields, which distinguish between the previously

described addition and modification as well as between the integrated and adjacent positioning/scope. Further criteria for a classification are the **POINT OF RELEVANCE** (before, while, or after reading) and often consequently its **PURPOSE** (orientation, memorability, summary, ...).

POSSIBILITIES OF APPLICATION

The differentiation within the taxonomy allows the designer to **COMBINE SINGLE FIELDS** and thus to integrate two separate data sets, to place links to corresponding

data points right within the text or even to use these links to provide thumbnails of the adjacent graphic.

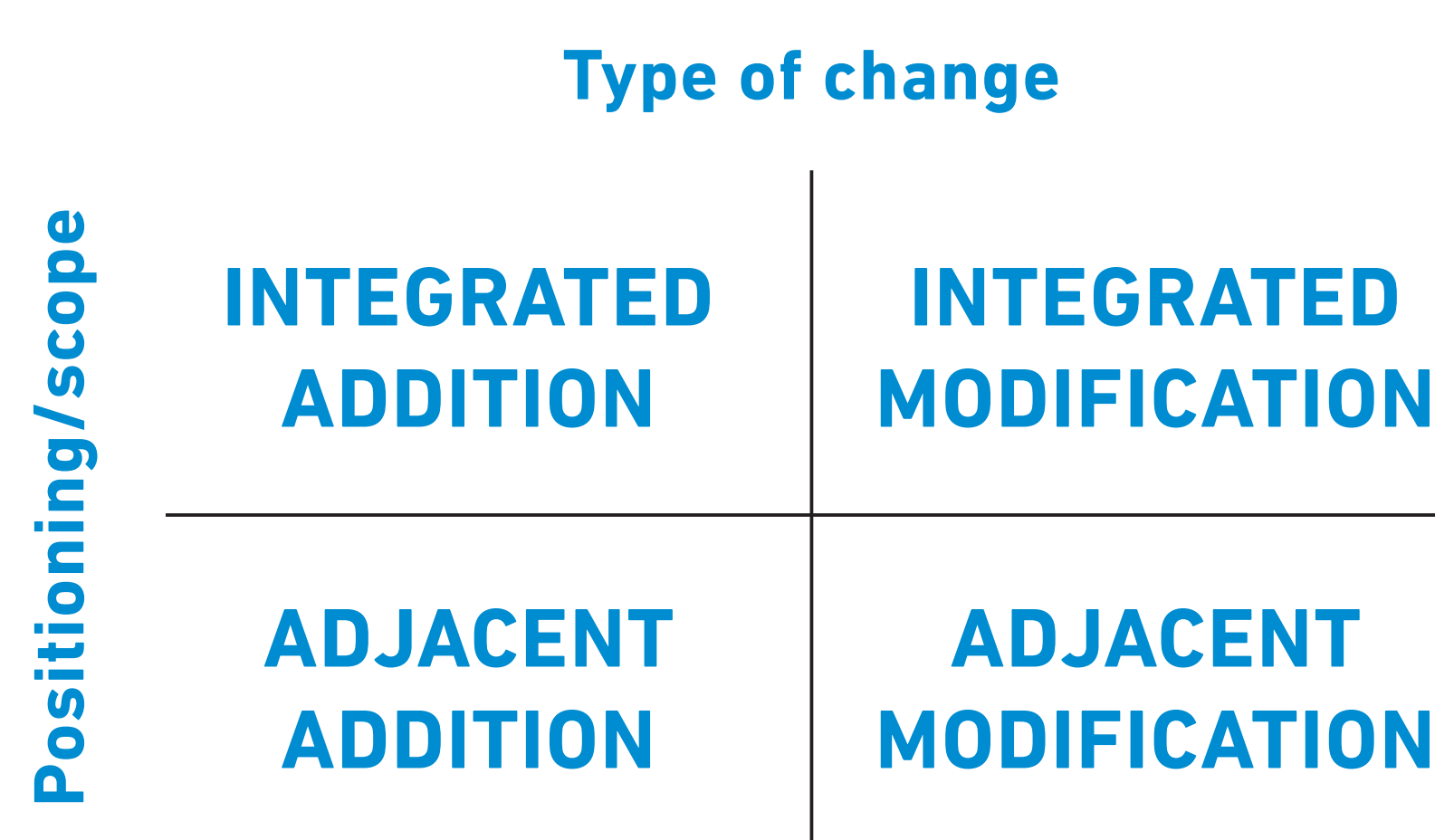


CONCRETE
Images

VISUALIZATION AS IMAGES

ABSTRACT
Text

TEXT WITH TYPOGRAPHY



BEFORE

Orientation

Navigation

Sense of content

WHILE

Memorability

Deepening

Extension

AFTER

Summary

Aide memoire