

# Qualities of the Past - Telephones of the Future

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## ABSTRACT

We approach future interaction design of telephones from a historical perspective in order to reintroduce those interaction qualities, which lie in outdated technologies but have been lost today. The goal of this research is to develop a tangible user interaction concept for mobile phones of the future. We studied interaction styles in the history of both telephones and mobile phones to identify desirable interaction qualities, and then gradually transferred them into the expression of future mobile phone interaction.

**KEYWORDS:** Interaction style, interaction quality, interaction expression, mobile phones

## INTRODUCTION

In recent years, the unbalanced development between mobile phone functions and interaction design has been wildly recognized by the HCI community. However, most research focused on approaching the design of tangibility by augmenting sensors into hand-helds to sense pressure and movements[1], or putting an actuator to provide tactile feedbacks[2]. It seems to be no alternative to the traditional key pad and touch screen in terms of physical user interface.

Looking back to the history of telephone development, there are a large number of telephone variants that invites much richer and more expressive interactions than today's mobile phone. We take a historic angle on the design of future mobile phone interaction to expand the thinking of user interaction beyond thumb pushing.

The interaction style thinking is previously developed by Ørstrand and Buur (2000) [5], and has been proved highly successful in designing innovative interfaces for control devices used in industrial plants. The general idea is to trace the product

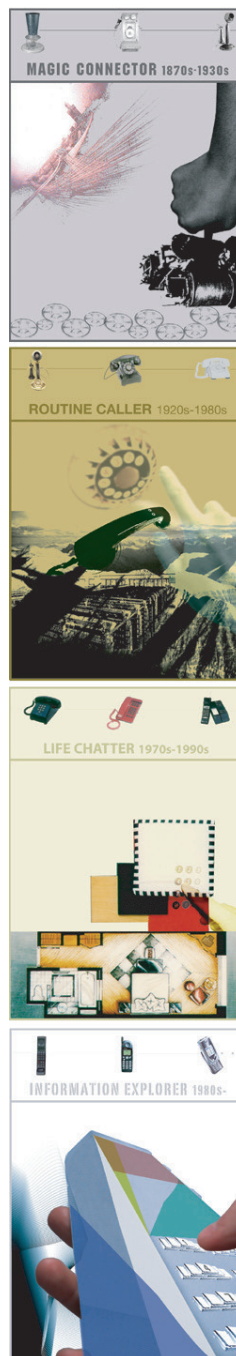


Figure 1. Telephone style mood-boards

design history, identify eras of distinct interaction styles, extract preferred interaction qualities and use these to support the interaction design of contemporary products. We employed the interaction style thinking as the way to facilitate our understanding of the past of telephones.

## TELEPHONE INTERACTION STYLES

The goal of the interaction style research is to understand the underlying philosophy of the different interaction forms through telephone history. In particular we focus on what interaction qualities were archived in the earlier telephone eras, and in which contexts these qualities belonged.

We collected personal stories of telephone use through interviews with elderly people and studied telephone history in literatures [3,4]. In addition, we gathered a collection of “telephone episodes” from old movies. Finally, we visited a number of telephone museums to personally experience outdated interaction qualities. The research was synthesized into four distinct telephone interaction style periods. We prepared the following mood-boards to express our feelings of the interaction values of the time. [Figure 1]

## WHY WERE OLD PHONES EASY?

We involved graduate students at the University of Southern Denmark in exploring the quality of outdated telephone interactions. Below we summarize the most prominent interaction values expressed in these designs.

## Physical

Early telephones invited people to interact with physical objects in a relatively large-scale while the inherent feedbacks were felt. Turning the crank involved moving the entire arm, and the rotary dial required movement not only of fingers but of wrist and arm as well. The principle of the rotary dial is to open and close an electrical contact as many times as the digit dialled. As a natural result, the auditory and tactile feedback of the mechanism were perceived by the caller.

## Continuous

Callers experience the entire process of interaction, which varies the use experience from task to task. The action of dialling a “9” on a rotary dial required more strength, longer time, and a different path than that of dialling a “1”. Each telephone number required a particular rhythm of actions. Differentiation of experience helps to confirm the actions of callers.

## Transparent

Earlier interface was the technical solution and the required actions directly communicated how technology works. Turning the crank drives a magneto turning in a magnetic field inside the phone that physically generates the electrical pulses. Technology was not hidden but exposed. The connection between control and function was visible. There was no time delay and location difference between the interaction and the reaction of it. Control was the display.

## Accessible

The introduction of push button phones provided direct access to the core function, namely dialling telephone numbers. The buttons were clearly labelled with sufficient space in between to allow easy access for fingers. The quality of touching the digits was perceived highly modern and efficient.

## Expressive

Early telephones supported people in expressing feelings through interacting with them. The crank phone did not require an accurate turning speed or number of turns, as long as it was enough to generate the electrical burst. So, callers could turn it quickly and powerfully when urgent, or turn it gently to have a chat with friends. In routine caller period, people also tended to exhibit frustration or anger by slamming the handset back in the solid cradle.

## RE-INTRODUCING INTERACTION QUALITIES

Designing a tangible interaction concept for mobile phones was a process of transferring the qualities of outdated telephones into the expression of future mobile phones. We went from an abstract level of design to experiment with forms and interactions for each of the five interaction qualities, and then gradually refined our design into a concept with a shape and size in line with present day phones. [Figure 2]

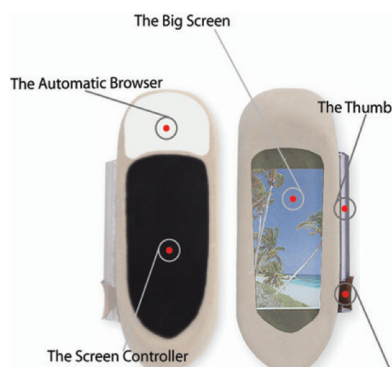


Figure 2. Future mobile phone interaction design concept

## The “Spring” Case

Being inspired by the shape of the telephone cord in routine caller era and the fact that rotary dial automatically returns to its resting position, we started experimenting with a spring. Automatic rebound is a natural property of springs, and this is a good metaphor for the control of one-way communication. Sending SMS is a typical one-way communication, and SMS is mostly used among young people for fun and informal contacts. Therefore, we designed an easy flipping of the “Thumb slider” as the way to send and receive SMS. [Figure 3]



Figure 3. Send SMS

## CONCLUSION & FUTURE WORKS

During the research, we realized that good interaction qualities are independent from interface technology. Interaction style thinking suggests a systematic way to understand product design history and extract valuable interaction qualities from outdated interaction forms. Our design concept is one of many possible expressions that represent the valuable interaction qualities we learned from the history of telephone. Our next step is to implement the concept design into a working prototype. A series of user studies will be conducted to evaluate the design in practise. We look forward to see how users interact and evaluate the interaction qualities from the past, and it will surely lead us to a new level of understanding in designing tangible interactions.

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