Preface

In a very general sense, enhancement is a process of improving the capabilities of a human person. Improvement can be achieved by invasive and non-invasive means or methods. Since the beginnings of human culture, persons have been transforming their environment and, in the process, also changed themselves. They have improved through language, technology, and organisation of the social space. In this context, *Bildung* and technical skills are constitutive sources of the improvement of the conditions for self-preservation and self-assertion of human individuals and societies. In contrast to other animal life forms, it is possible for individuals of the human life form to intentionally influence their capabilities. Historically, the technically and culturally improving human being has been the rule and by no means the exception.

Cultural improvements initially appear under the guise of technical impact on persons and their environment. As a result of scientific and technical progress, there has been a considerable expansion of direct influence on the physical and mental development of the human life form. This influence opens new scopes for action. In recent decades, technology-based enhancement has expanded significantly. This is mainly due to the availability of new invasive technical tools and pharmaceutical products. This form of improvement is now mostly referred to by the term ›enhancement‹. Unlike therapy, which is concerned with healing, reverting to a condition prior to illness, or reducing suffering, enhancement aims to improve a person's capabilities regardless of illness or suffering.

Recent methods of enhancement use performance-enhancing means and surgical or neurosurgical interventions to produce desired effects with less effort and, above all, in a shorter time compared with conventional practices. The desire for invasive performance enhancement often disguises constraints in personal life, school, university, and professional life that usually come about without the participation or consent of the persons concerned and are often neither attainable nor reasonable. Under these conditions, neuroenhancement amounts to surpassing requirements that are just about manageable by conventional means. Because

the optimisations are pursued without a deeper understanding of the motives for the desire to improve performance and of the causes and reasons for the competitive relationships at play, they contribute to instrumentalization and self-instrumentalization.

The enhancement debate is ultimately based on two opposing conceptions of personal life. While cultural enhancement concerns a person who develops capabilities in a social space and interacts with her reality in initiatives and deliberate reactions, conceptions of invasive performance enhancement assume a passive person who transforms herself into desired states or allows herself to be put in those states, expecting a beneficial hedonistic outcome.

Due to the diversity of neurotechnical interventions, normative evaluations must relate directly to the respective fields of application. This applies to the distinction between therapy and enhancement as well as to the analysis of the relationship between disease and the consequences of intervention. For example, the evaluation of the use of deep brain stimulation in psychiatric disorders is fundamentally fraught with the difficulty that these interventions themselves have personality-altering effects. In this respect, the question of the consequences of intervention must be dealt with differently from that of the treatment of other dysfunctions. Also, the side effects of neurotechnical interventions and their long-term consequences are not yet well understood. Therefore, in each individual case, evaluations of the long-term effects must be balanced against the psychological and physical burdens imposed by the disease itself.

It may occur that changes in personality are considered problematic from a medical point of view or from the point of view of relatives but embraced by the patient. In a situation like this, the concept of authenticity is often invoked, but there are major epistemic obstacles when dealing with this concept. Practically, it is difficult to determine whether an expression of will can be considered authentic. This is true even for the corresponding subjective attitudes, which depend on relevant and comprehensible information and are embedded in specific social contexts. What makes it more difficult is that many applications of deep brain stimulation are or must be performed on patients whose capacity to understand and consent is limited due to the conditions of their disease.

The advocates of extensive enhancement in general and neuroenhancement in particular have the self-interest of individuals in mind. They see enhancement as a private endeavour rather than a social process. However, there have also been attempts to bring neuroenhancement and social justice into a direct relationship to compensate for social disadvantages in the development of personality and education as well as in the

provision and redemption of life chances. Such compensations always bear the risk of instrumentalization due to the syndromes of self-deception and overattachment associated with neuroenhancement if they must be applied permanently. In this respect, neuroenhancement would aggravate the problem of social justice rather than compensate for inequality. To be sustainably anchored in a person's living conditions, justice must be realised socially—not technically.

Given the potentially far-reaching consequences for individual persons as well as for societies as a whole, neuroenhancement poses profound normative challenges. Possible dangers for individual persons and threats to the social framework must be considered. We must address the question how the techniques of neuroenhancement can be employed in ethically justifiable ways. For the time being, the search for answers will remain a source for debate and conflict.

This expert report provides a concise overview of the contemporary debate on neuroenhancement. It discusses the definition, techniques, and targets of neuroenhancement and examines arguments for and against it at the level of individual persons, social interaction, and social policy.

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