Introduction

Many recent public health intervention programmes that have focused on altering individual risk profiles via advocating behavioural change have proved to be spectacularly unsuccessful\cite{1}. From a medical, particularly a psychological perspective, a misinformed or reluctant patient or clientele has often been perceived as being at the heart of this lack of success and, consequently, many attempts at improving interventions have focused on individual knowledges, perceptions and motivations\cite{2,3}. Critique from an epidemiological perspective at this narrow conception of susceptibility has for some time now postulated that some effects cannot be measured if social groups are seen only as collections of individuals\cite{4}. Increasingly, the minimisation of effects of context and bias common to epidemiology has received a reframing from an anthropological perspective from which these concepts are perceived as objects of study to be explained\cite{5,6}. To date, disease patterns with increasingly complex biosocial etiologies, such as obesity, are beginning to introduce a change in thinking, extending an individualistic notion of illness and health to include social and structural variables\cite{7}. Accordingly, the repertoire of public health intervention programmes is being extended to incorporate community-focused measures with some success\cite{8}.

Reflecting this development, one might argue that public health has followed a path of dialectic progression: Initially a branch of medicine dealing with communicable and
infectious diseases on a social or structural level improving hygiene and sanitation, social medicine and public health moved increasingly toward a notion of health concerned predominantly with individuals and compliant behaviours, before approaching synthesis in a marriage of subject and sociality.

From a medical anthropological and science studies perspective, however, this seemingly linear disciplinary progression certainly presents as a more complex development that may be questioned and investigated on at least three levels in order to better understand the current constitution of public health. At a macro level, the question arises how public health as a discipline is situated within and interacting with the medical system? Biomedical innovation, economic and social pressures, disciplinary status and the increasingly networked or interlinked nature of therapeutic approaches are potential targets for thought and empirical investigation. Focusing on a meso level, questions about the socio-medical constructions or productions of individuality and collectivity become a matter of interest. Epidemiology has a tendency to conceive of the link between subject and population (and vice versa) as linear and additive. A mirage of individuality arises from the use of distinct aggregates as singular entities, i.e. risk profiles. At a micro-level, then, the focus may rest on the negotiations of identities involving different knowledges and practices (medical and otherwise) amidst the troubles of daily life. At a meta-theoretical level, the medicalisation of culture(s) and the culturalisation of medicine(s) needs to be reflected particularly with a view to changing and diversifying notions of health and illness amongst the public. It might be helpful in this context, to rethink and update the notion of a cultural epidemiology dealing with epidemiologies of ideas and social relations.

In order to enter into a discussion about the defining elements of this arguably new public health, this paper puts forward three lines of investigation that are certainly open to additions and modifications. We hope that the seminar will create sufficient space and inspiration for everyone to voice their thoughts and argue their points:

- Purifying statistic – the role of evidence-based medicine (pg.3)
- Individualised medicine in the genomics era (pg.6)
- Embodiment and the Other (pg.7)
Evidence-based medicine

With the retreat of infectious diseases during the early decades of the 20th century, epidemiology began to extend its sphere of influence beyond communicable diseases. Following a more general pattern of enumeration of people and their habits and the disappearance of determinism, the science concerned with the regional distribution and the risk factors determining prevalence of disease that had so far been used in public health to investigate infectious diseases only, now began to offer its methods to understand coronary heart disease and other diseases of high prevalence.

Epidemiology's success supported the introduction of statistics to the medical sciences as a whole, thereby giving birth to the opportunity for a systematic or ‘objective’ link between individual patients' ailments and disease patterns. Rather than relying on individual experiences and anecdotal reports about etiologies, treatments and effectiveness, practitioners were now able to build systematic records, which could be statistically manipulated, bringing a new level of perceived objectivity to medical science and clinical standards. Around the turn of the 21st century, this development appears to have reached another level. Evidence-based medicine has elevated the randomised controlled trial to the “gold standard” in the assessment of drug and treatment effectiveness and efficiency. The rigorous classification of evidence based on data quality has not only changed the medical discourse. It is also beginning to influence day-to-day medical, and in particular clinical practice in many different ways. Starting with alterations in teaching and training systems, practitioners are now urged to consult regularly the relevant literature to update themselves on rapidly changing advice and can increasingly resort only to those drug regimes and treatment options that have been sufficiently studied according to evidence assessment criteria. An increasing need for cost-effectiveness and protection from litigation in clinical settings may be lending further support to the rise of evidence-based medicine.

Understanding the impact of evidence-based medicine on day-to-day medical practice is above all an empirical task. The difference in pace with which North American and European medical systems have so far proceeded along this new vector, appears to offer good comparative study ground. Of particular interest could be cross-cultural studies in different medical settings investigating how (implicit) knowledges and routine practices fair against evidence-based “best practice”. Settings somewhat “off the beaten track”, e.g. rare diseases, patients from minorities or unusual symptomologies, might constitute boundary conditions under which to examine the credibility and trustworthiness of science-based practice.
Public health has so far not been a focus of evidence-based medicine's gaze \[8\]. Often investigating soft interventions in circumstances too complex to control, e.g. at community level, studies in public health struggle to conform with standards of evidence assessment. Rigorous, quantitative assessment of public health interventions has, on the one hand, always been desirable not least in the political realm to control public spending. On the other hand, those that argue in favour of incorporating public health into the evidence-based medicine regime are matched by those who ponder whether quantitative data is revealing anything we did not know before. Public health appears to be a region close to the border of the evidence-based medicine territory. Its inhabitants are well trained to deal with statistics, i.e. the method of evidence-based medicine, yet their study material is seldom amenable to sufficient control and exclusion of confounders.

In order to pursue this line of thought, let us briefly consider the nature of quantification and statistics. The basic building block of statistical analysis, t-test or structural equation model, is the search for correlations, i.e. the systematic comparison of sameness, difference and change. Its starting point and of most concern in this context, is the process of aggregation necessary to create statistical power from individual data points. Aggregation relies on a certain degree of similarity between data sources making it necessary to reduce complexity by abstracting to model conditions while at the same time checking the (ecological) validity of the model to exclude confounding influences.

Abstracting, if not in principle at least in common practice, strips away individual as well as social and structural parameters. It is this purification process that allows epidemiology to produce descriptions of average, idealised or prototypical disease. It is this same purification process, however, that also casts doubt on the quality of data that emanate from disease contexts in which social and structural parameters are likely to play an important role. Public health and epidemiology's daily bred is the use of statistics in order to make sense of the messiness of disease patterns in regions and populations. Conducting randomised controlled trials at community level, therefore, will be a dream for most public health professionals – both, in the sense that it would be a marvellous achievement to use and control for an immense number of variables and also in the sense that it is an illusive idea. Individuality and the fact that individuality cannot simply be added to arrive at collectivity or sociality, carries messiness into public health. This messiness becomes amenable to at least some degree of control when risk profiles
are introduced - aggregate entities as individual as seemingly necessary from a medical perspective. Alas, the creation of medical individuals stripped of their personal and collective biographies yields few successes as far as interventions are concerned[1].

Gazing at this notion of individuality from another perspective, very different questions arise that have much more to do with a changing politics of rights and responsibilities in individualised societies. Many have pointed to deep-seated changes in the social fabric of contemporary Western society[18], the consequences of which surface in controversies over (re)assigning stigma and solidarity. Adding to these broad brushstrokes the details of an increasing somatisation of individuality[19] and a fruitful study ground arises amidst the negotiations of (non)medical identity claims.

Observing and analysing how competing demands are reconciled in different settings, the anthropological approach will have to ask how public health construes individuality, difference and community and vice versa. Continuing the search for intersections[20], the production of difference in public health contexts may present an opportunity to operate beyond a professional/non-professional dichotomy and investigate what matters when aspects of individuality and sociality are performed that may acquire a relevance to public health.
**Individualised medicine**

The increased influence of biology on medical thinking introduces our second line of investigation. The term “individualised medicine” has been created to sum up a series of recent developments fostering predictive diagnostics and interventions at gene or protein level that are specific to certain genetic make-ups\[21\]. Though the search for “disease genes” is in full flow, monogenetic diseases or conditions where the effect of a particular mutation is well understood are rare. Instead, most diseases with a proposed genetic component are currently assumed to be caused or shaped by complex gene-environment-lifestyle interactions. Understanding these operating mechanisms poses a real challenge for molecular medicine. Considering the complexity of signalling cascades for a single protein-based regulatory mechanism and given the multitude of finely balanced feed-back processes involved in the routine day-to-day running of the human body, it is less than clear how long it will take to begin to understand gene-environment interactions for complex diseases such as obesity.

This lack of clarity renders public health thinking enormously difficult for its central concept, the ‘target population’, is beginning to dys-appear\[22,23\]. While many traditional targets such as “class” are being deconstructed beyond recognition, the notion of the target itself is not vanishing altogether but rather (re)appearing qua ill-definition, hence often problematic if not non-functional, such as evidenced by the example of “race”\[24\]. Individualised medicine, ‘matched’ by thinking on individualisation in late modern social theory\[18,25\], diffracts populations rather like a prism. Those formerly grouped as obese now split into those with genetic mutations leading to, e.g. insulin resistance, those with neuroendocrine or metabolic etiologies and those with psychosocial factors dominating their anamnesis\[26,27\]. Of course, these different etiologies interact and lead to a spectrum of symptoms and treatment options. They are also linked to, for instance, heart disease and type II diabetes. This increasingly networked nature of disease, often captured in new diffuse categories such as metabolic syndrome\[27\], makes population-based, public medicine a difficult task.

The North American debate on race and genomics exemplifies the almost ontological difficulties that arise when the nature of sameness and difference becomes contingent\[28,29\]. Though this controversy has by no means been settled, it has become clear that “despite the typical desire of geneticists to be left alone to do their work, even the most abstract of theoretical biologists cannot stay within objective considerations because this subject, from sampling choices onward, is essentially embedded in its
cultural context.” Nevertheless, reification of race in genetic variation has become a real issue in the US. Many, therefore, argue that a good study of race and genetic medicine should start with a fact, e.g. increased levels of prostate cancer amongst African Americans, and focus not only on the genetic variants but also the lifestyle and environmental factors implicated in this increase. In Germany, race and genomics has not acquired a comparable status, though the developments across the Atlantic are watched with increasing interest. This poses a number of empirical questions relating to cross-cultural differences in epidemiological and medical styles of thought between North America and Europe as well as the transnational nature of biomedical platforms.

Race is a prominent example. Yet at the heart of the wider debate lies the question how sameness and difference as operative categories are produced, performed and justified. In an extension of the evidence-based medicine line of investigation that focused on the role of social and structural parameters in the construction of disease and population, this section on individualised medicine asks questions about the interactions between different modes of producing collectivity beyond the hapless genetic vs. social determinism dichotomy. Critical theorists’ thoughts on the notion of the “dividual” as a new entity in emerging societies of control might have to be considered in this context.

As an important sideline, the lack of clear target populations has created a strange vacuum between the enthusiastic discourse of medical innovation and the very general advice about healthy living that emanates from public health authorities. This vacuum coincides, at least in Germany, with a (re)negotiation of health responsibilities that are shifting away from a national health service that used to care for those that were afflicted by illness, toward individuals that are increasingly responsible for their own illnesses. These developments certainly ought to be investigated in a broader context of changing politics of responsibility and emerging economies of blame.

**Embodied medicine**

Central to this debate is the recognition that the production of individuality and sociality is a highly complex and dynamic process that is increasingly shaped by a co-evolution of the biosciences and (late-modern) socialities. Enthused by the promises of health and life without worries and marred by serious ethical concerns and “incertitude,” the medical discourse has gained significance in a centred society, increasingly giving birth to forms of life and living whose relationships with the medical system are
characterised by ambivalence and ambiguity. Wanting of an escape route from existential anxiety, life in reflexive modernity distrusts the actants of the new medical progress while at the same time engaging with them in a quest for ontological security.

Some have tried to capture these developments in terms of a blurring of boundaries between the ontological categories nature and culture or technology with some success. Yet their critics argue with force that the grand narratives do little justice to the dynamic production processes within body-self-society matrices. Others have recently (re)focussed on embodiment as a concept that may allow us to investigate various ways of producing or performing individuality.

Whereas individualised and evidence-based medicine are professional concepts that reach out to patient settings, the “body thing” may offer a possibility to engage with the same concepts from the patient side and reach into the medical system. Recently, work on hypoglycaemia, child birth narratives and methadone substitution programmes has begun to perforate body boundaries by strengthening a performative approach to embodiment. Though initially born out of the dilemma to reintroduce the body into medical anthropology without having to ruin twenty years of feminist work to deconstruct nature/culture dualisms, it enriches a traditional phenomenological perspective and offers the opportunity to think about the role of different conceptions of the Other in embodiment.

Performative theories of embodiment may, therefore, be particularly suitable to investigate individuality and sociality in a context of public health. Once body-mind and subject-object dualisms are questioned, (bio)sociality can be woven into formerly subject-focused body concepts, which in turn have been helpful in theorising disease/illness. Annemarie Mol, for example, has shown how elements of different clinical settings become part of the performance of atherosclerosis. In public health terms, the crucial question is: (How) Do social cohesion, stigma and solidarity manifest themselves in performances or productions of disease? How does this manifestation interact dynamically with the medical system? Or put differently: How does the social and cultural production of difference and sameness impact on the performance of (public) illness? The notion of endogeneity might serve as bridge to epidemiological thinking if conceptualised not only as the influence of health awareness on behaviour (in epidemiological models) but rethought as the possibly reflexive nature of biosociality.
A recent paper by Steven Epstein draws attention to the difficulty of thinking public health in terms of embodiment, biosociality and science studies. Dealing with gender and race as ‘new’ categories in biomedical research, he convincingly demonstrates the problematic of constructing and legitimating groups on the basis of seemingly natural differences. Alas, his differentiation between race and gender on the basis of complexity does not seem to escape a reification of difference; constructed other- and sameness cannot rid itself of the scent of ontological difference. Thinking about the nature of difference as socially and culturally produced takes away the pressure to come up with an all-embracing (normative) conceptualisation and rather accepts the contingency of distinction. Critique, once levelled against the notion of the cyborg as an insufficiently discriminatory concept, once again applies. Yet contingency does not mean indifference toward difference. It merely argues that the performance or production of difference and illness may form a useful intersection to investigate the different facets of a changing public health. Maybe meaningful, operable mesoscale concepts will emerge at the end of empirical work.


