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**Session 2 – Invited paper**

**INTERNATIONAL DEMANDS ON CRIME STATISTICS, A SYSTEMIC APPROACH**

Submitted by UNODC[*]

1.      The Economic and Social Council, in its resolution 1984/48 of 25 May 1984, requested that the Secretary-General maintain and develop a United Nations **crime-related database** by continuing to conduct **surveys of crime trends and operations of criminal justice systems**. The major goal of the United Nations Surveys on Crime Trends and the Operations of Criminal Justice Systems is to **collect data on the incidence of reported crime and the operations of criminal justice systems** with a view to improving the analysis and dissemination of that information globally. The survey results will provide an overview of **trends** and **interrelationships between various parts of the criminal justice system** to promote **informed decision making** in administration, nationally and internationally. The survey is now in its eighth wave.

2.      We are gathered here to - *inter alia* - inquire into National and International Demands for Crime Statistics. In line with my profession, I would like to take the systems analysts' or "systems thinking" approach to this question. In this effort I will raise many questions and give few answers. Most, if not all of these questions have been raised and discussed before. Nevertheless, I hope a synopsis will be useful.

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[*] Paper prepared by Wolfgang Rhomberg. The views expressed on this paper are those of the author and may not reflect those of the United Nations

3.      For the system-thinker it is important to remember that a) all thinking is based on a **conceptual model** of reality and b) no model is meaningful without a **purpose**. "The map is not the road." Modelling implies omissions, distortions and generalizations. In our models we intend to simplify as much as possible without jeopardizing the purpose for which the model was set up in the first place. Unfortunately in practice these apparently reasonable premises are not always followed, and sometimes too much is taken for granted. In particular the mind set of the "customer" or user of the model may be quite different from that of the experts. The question "**Who are we doing this for?**" should be an ever present guiding principle.

4.      When collecting statistics on crime one of the first questions that may come to mind is: "Who knows about crime incidents?". Well, the perpetrator(s), victim(s), witnesses, media, police, insurance companies, etc. By selecting specific observer groups e.g. victims in the case of the ICVS and police in the case of the UN crime trends survey we commit to specific conceptual models that yield different results.

5.      Let us look at the United Nations Survey on Crime Trends and Operations of Criminal Justice Systems: The kind of statistics gathered is easily described: The criminal justice system is divided into four parts, police, prosecution, courts and prisons. 18 crimes are selected and the number of recorded crimes, prosecutions, sentences and number of prisoners per category counted. In addition the survey asks for budgets and staff in each part of the criminal justice system. There are other details like gender - and age breakdown. Please refer to our web-site[1], where you can find relevant information on the surveys and the latest survey instrument in the six official UN languages. How close does this conceptual model and consequent implementation of the survey bring us to the goal given in our mandate?

6.      The ultimate goal is clearly stated: "to promote informed decision making in administration, nationally and internationally". Or is it? What are these decisions to achieve? A reduction of the number of criminals? Reductions in the cost of crime? Higher attrition rates? Greater efficiency of the criminal justice system? Lowering of crime infection rates via successful crime prevention programs? Increased security and quality of life?

7.      The seemingly obvious expands to a jungle of potential approaches, and each of these approaches may have different needs as regards evidence based policy. I would say, that the current UN crime trends survey addresses many of these goal interpretations, but not all of them. In collecting statistics, an explicit statement of the underlying conceptual model that links to detailed goal specifications should be very valuable.

8.      Next, we might want to consider the introduction of **meta statistics**: Following in other's footsteps[2], I think it is important to answer questions like: Who reports? (and who does not?) What is being reported? When and How? Who is the intended primary recipient of the reports and for which purposes are the reports used? With whom are the results shared and what kind of feedback results from sharing the data? How accurate, complete, timely, reliable, consistent, and comparable are the data and how would we measure these attributes?

9.      Let me look at some of these questions more closely:
In the case of police recorded crime, the question: "**Who** reports?" has a trivial answer: "The police!" But even if we do not have a split between federal and state police, or different police structures within the same country involving e.g departments of the interior, justice or the military, the question remains, how consistently information streams are aggregated and consolidated up the reporting chain, finally

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[1] http://www.unodc.org/unodc/crime_cicp_surveys.html
[2] See e.g. European Sourcebook of Crime and Criminal Justice Statistics, 2003 (WODC)

ending up with a single, responsible agency. I am certain, that due to the diverging competencies of various agencies in many countries we do not see the whole picture. An estimate on the level of coverage might help. A particular problem is to identify a top agency responsible for all crime statistics within a country. The UN crime trends survey used to address statistical institutes in countries directly. It was later decided, that this approach should be replaced by the note verbale process involving ministries of foreign affairs. As a result we now get responses from countries that did not answer in the past[3].. And unfortunately we do no longer receive responses from countries that did respond. So depending on "who reports?" you may not only get different answers, you may not get an answer at all

10.     One would expect to find differences in **what** is being reported: Take for instance the expression: "significant drug seizure". A quantity seized may seem significant at one location but not at an other. If we do not know the rules, whatever is being reported drifts about without much of a context. Next, let us consider the drug seized. How sure can we be, that it is substance x as reported and not substance y? Meta statistics on the modalities and capacities of identifying confiscated drugs in a country or area might be useful. Even if the substances reported were beyond doubt, there is still the question of purity. For instance, we had the case of a LSD seizure report of 15 kg. Considering that an active dose is about 75 micro grams, this single seizure would represent 200 000 dosages which, I am told, is in the magnitude of one years world supply. As it turned out, the packing cage weighed 15 kg and the actual LSD was only a tiny fraction of that weight. To top this, there has been recent discussion at the EMCDDA in Lisbon, whether it is worth the effort to report on LSD seizures at all.
The uncomfortable conclusion from this example is, that in some cases the precision of our measurement can be quite small, in fact a single measurement can have an error the size of the entire population. One would assume, that asking for the reliability or confidence of these measurements is reasonable so that the precision of measurement can be considered in the analysis of the data.
I would also advocate to use discipline in asking for the essential and the essential only. In the responses to the crime trends survey we see repeatedly that large sections are left blank. Here the slogans: "Less is more" or "Small is Beautiful" should be used as guiding principles.

11.     When asking for "less" I am not asking for "more general". A question like "…all drug related crime…" may stem from the good intention to keep the number of variables down, however, it is so general, that the response may not be useful for policy making purposes. It must also be considered whether a question can be answered at all. If the necessary infrastructure for raising the statistic is not in place, this is futile[4].

12.     Of extreme importance is to always remember/clearly point out the **unit of measurement**. Are we counting offences or offenders? We need to know whether we are counting the number of convictions for the most serious crime in case of several offences being committed at the same time (the so-called "multiple offence problem"), or the occurrence of single offences that have been committed repeatedly by the same person. If a crime has been committed by several perpetrators it could be counted as a single incident or once per person. Not knowing what we are counting is bad enough, but the tendency of humans to assume the familiar, and thus not even being aware of the pitfalls, makes this worse. And in many cases the users of crime statistics are not criminologists.

13.     Next, let us look at the **when** of counting: There are countries who count a crime following an initial report ("input statistic") and those who count following an initial investigation ("output" statistic) . The number of cases reported is consistently lower in case of output-statistics. Especially when attempting to compare statistics across countries with different reporting rules, it would be important to

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[3] 12 countries: Austria, Belgium, Bolivia, Ecuador, Ethiopia, Jordan, Kuwait, Luxembourg, Malta, Myanmar, Namibia, Nepal
[4] to know, what we do not know, can and should start valuable initiatives.

know what kind of reporting is involved. We could then limit the comparisons to countries with similar set-ups or try to adjust for the differences.

14.      On the **how** let me give you an other war story. Some time ago, in Austria, a new internet based system for reporting crimes was introduced. As happens, response times on the internet are not always the same. Therefore impatient reporting officers pressed the send keys on their reporting forms several times in the hope to accelerate the procedure. The result was, that at the time a certain area in Austria seemingly had more burglaries than households.

15.      These examples show, that on top of describing the data collection methodology it would be desirable to have statistics on the modes of collecting the data or as I call them, meta-statistics.

16.      Before I start to bore you, if I have not done so already, let me return to the systems approach. For simplicity reasons let me choose the goal: "Reduce the number of criminals", or more precisely, "the number of people committing crimes". In contrast, consider the goal to reduce crime rates, or the number of crimes committed per time. In choosing this example I reason, that crimes cannot be committed without criminals committing them, and for most people it is easier to visualize a stock of perpetrators than a vector of different crimes committed within a period of time, let alone differential equations.

17.      Any dynamic model[5] consists of stocks and flows. A stock or state is like a bathtub being filled from a faucet and drained through a sink.
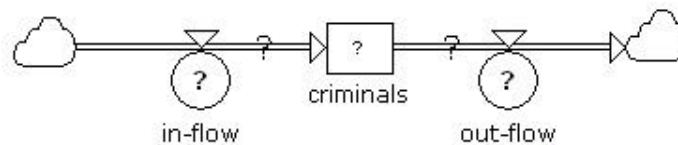


Stock and Flows model

18.      In order to reduce the number of criminals we have two options: We can reduce the inflow and/or we can increase the outflow. The first would be considered to be **defensive** measures whereas the second is labelled **offensive** measures. Reducing the inflow would – *inter alia* -involve the attempt to lower the vulnerability to becoming a criminal. Increasing the outflow means reducing the number of criminals by taking them out of business e.g. by putting them to jail or converting them to straight citizens by some other means.

19.      It is interesting to compare this extremely simple flow model with the concept of the UN crime trends survey. Here we have Crimes → Suspects → Convictions → Prisoners.
Besides switching between units of measurement, the UN survey concentrates entirely on monitoring offensive measures. Little attention is given to monitor crime prevention or the efforts of reducing the inflow to the stock of criminals. Are we missing 50% of the story from the outset?

20.      Given, that we should concentrate on the offensive side, ideally, the survey would track a criminal through the criminal justice system, telling us along the way how effectively society responds to crime, and, at what cost. In practice however, the approach is somewhat different.

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[5] "Business Dynamics" by John D. Sterman, Irwin/McGraw-Hill, 2000 is an excellent textbook on System Dynamics

21.    First we count the number of crimes as recorded by the police. We all know, that this number does not coincide with the number of actual crimes. Next, we learn about the number of suspects for each crime. It is important to note that on top of all the possible recording errors the crimes we counted are not necessarily linked to the number of suspects counted in a given period. In fact, in many cases the crimes for which accusations are raised will have been committed in prior time periods. This makes it more difficult to estimate attrition rates. The time it takes to start prosecution after an offence would be interesting to know, but we do not ask for it. Likewise the link between suspects and convictions, and convictions and imprisonment is weak.

22.    Clearly at the UN level, in order to arrive at global trends, we are not, and must not be interested in individual cases. However, the current counting procedure has structural flaws. I think it would be useful to discuss the possibility of making data in case tracking systems anonymous and aggregate them. – If only everyone had all-encompassing and comparable case tracking systems.

23.    In my opinion there are many lessons that can be learned from systems dynamics. Things like policy resistance, bounded rationality, tipping points, and counter intuitive behaviour, to name just a few. As an example I would like to mention the importance of delays. A slight shifting of phases in positive and negative feedback loops can produce dramatic effects that only show after a long period of time as in the following (admittedly constructed) fifth order example:
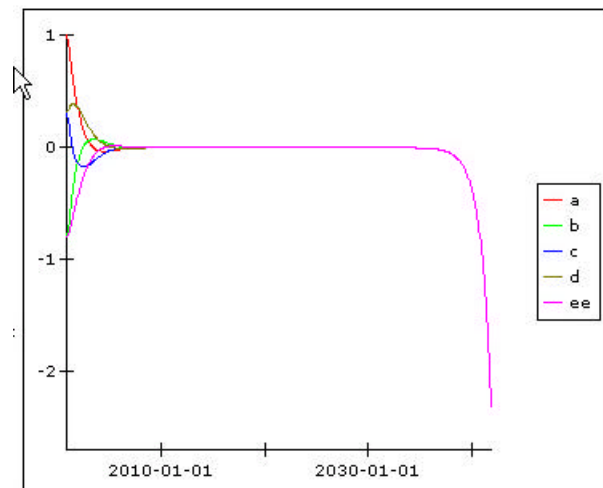


Mathematically constructed example of a systemic time bomb.

24.    Four influences a, b, c, and d are shown to seemingly stabilize a situation ee for more than 25 years[6]. However, in the end the system explodes. In reality there are thousands of influences and a decline of crime rates for some years does not preclude the built in possibility of a trend in the other direction many years later. Likewise, the behaviour or response of a system to a single policy will most likely reverberate throughout the system for a long time. Expressing it as a simple up or down next year, as is often done, may be misleading. If we lock up all criminals for 10 years, we may have comparatively low crime for ten years, but upon release they might all come back with a vengeance.

25.    A consequence of this consideration is to avoid drastic and frequent changes in crime trend surveys. This is a dilemma. Changing needs compete with the desire to have stable time series. After keeping the changes of the seventh and eighth survey to a minimum, I think, that it is time again to

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[6] In fact, the "sleeping-period" can be lengthened ad libitum by changing the input parameters accordingly

review the UN crime trends survey, especially in response to the conventions against organized crime[7] and the convention against corruption[8]. In addition to the phenomena themselves, it would be interesting to know how well countries are doing in building capacity and institutions. We will need to keep tabs on a number of indicators yet to be defined. Some of these may be transnational[9] in nature and may require **international cooperation** to collect.

26.     My final plea concerns the interpretation of statistics. A high total recorded crime rate may mean that there is a lot of crime, or it may mean, that even small offences are meticulously recorded and that the state does an exemplary good job. A high seizure rate may indicate a severe drug trafficking problem or it may point at a highly effective interdiction system. A relatively high police budget may point at an effective police force, a state in which the police enjoys benefits such as sports stadiums and high education, or a totalitarian regime.
We must not – *a priori* - conclude that a country with a higher crime rate is a more dangerous place to live in, or that its policies have failed. The contrary may be the case.

27.     I would never dare to say these seeming trivia, if we did not receive concerns from countries who feel that our statistics shed an unfavourable light on their politics. Maybe it should be demanded that the experts do not only produce numbers, but that they provide even more guidance in the interpretation of these figures.

28.     In summary we could deduce a kind of wish-list from the experience with the UN crime trends survey which I would like to submit for your consideration:

1. Clearly express the conceptual model and objectives in collecting any crime statistics.
2. Include documentation on the data collection methodologies including, where feasible, meta-statistics on the circumstances of measurement and precision estimates.
3. Keep the number of questions in surveys as small as possible but avoid extreme generalizations (*reductio ad absurdum*).
4. Consider and document the modalities of the reporting chains giving special attention to the scope of statistics aggregated and responsibilities of reporting agencies at each stage.
5. Shed light on different possibilities of dealing with the problems, e.g. monitor prevention efforts.
6. Consider possibilities of arriving at aggregate statistics through the establishment / utilization of individual case tracking systems and by making individual cases anonymous.
7. Help "customers" and media with the interpretation of data.
8. The new conventions against organized crime and against corruption require new indicators for scoring. This may well require transnational cooperation and should be dealt with accordingly.

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[7] http://www.unodc.org/unodc/en/crime_cicp_convention.html
[8] http://www.unodc.org/unodc/en/crime_convention_corruption.html
[9] E.g. number of extradition requests or cross border investigation collaboration